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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	:	09/765,964	Confirmation No.	:	9148
First Applicant	:	Mohammad S. Salim	Art Unit	:	2154
Filed	:	19 January 2001	Examiner	:	K.S. Lin
Title	:	Method and apparatus for implementing an active information model			
Docket No.	:	023-040001US			
Customer No.	:	33486			

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF INVENTORS UNDER 37 C.F.R. § 1.131

Sir:

We, Mohammad S. Salim, Barbara J. Rossner, and Ronald M. Barber, being duly sworn, do hereby declare and state as follows based upon our personal knowledge:

1. I, Mohammad S. Salim, am currently the Chief Executive Officer of Corybant, Inc. of Boulder, Colorado (hereinafter Corybant) and have been an owner employed by Corybant since August 1993. My current office address is 2211 Bluebell Avenue, Boulder, Colorado 80302. While at Corybant, I invented, together with Barbara J. Rossner and Ronald M. Barber, the system and method that are described and claimed in the above-referenced patent application. In my role as CEO of Corybant, I prepared various documents, including some of the documents discussed further below, during our conception and development of the invention that is disclosed and claimed in our application. Corybant is the current assignee of our above patent application.

2. I, Barbara J. Rossner, am currently the Vice President and Chief Operations/Financial Officer of Corybant and have been employed by Corybant since November 1997 and prior to that I consulted with Corybant from October 1993 to November 1997. My current office address is 2211 Bluebell Avenue, Boulder, Colorado 80302. While at Corybant, I invented, together with Mohammad S. Salim and Ronald M. Barber, the system and method that are described and claimed in the above-referenced patent application. In my role as COO, I

tracked our progress during the development of the system and method that are described and claimed in our above-referenced patent application, and I prepared related presentations and other documents, some of which are attached exhibits, as explained further below

3. I, Ronald M. Barber, am currently the Vice President at W.G. Nielsen & Co., and have been since July 2002. My current office address is 3200 Cherry Creek South Dr. Ste 470 Denver, CO 80209. Until July 5, 2001, I worked at Corybant. While working at Corybant, I invented, together with Mohammad S. Salim and Barbara J. Rossner, the system and method that are described and claimed in the above-referenced patent application.

4. We are aware that Corybant is in the business of creating, among other things, a variety of models for managing distributed information systems, including enterprise information systems. We are the inventors of the claims pending in the above-referenced patent application.

5. By this declaration, it is our intention to swear back of United States Patent No. 6,697,865 to Howard et al. (hereinafter Howard).

6. We are aware that Howard has been cited against various claims pending in our above-referenced patent application. In particular, Howard has been used as the sole reference in the outstanding rejections under 35 U.S.C. § 102(e), and Howard has been used as the primary reference in the outstanding rejections under 35 U.S.C. § 103(a). There are no outstanding rejections that are not based on Howard as the primary reference.

7. The application that issued as Howard is United States nonprovisional utility patent application no. 09/477,254, which was filed on 4 January 2000 by Garry W. Howard and Michael R. Gretzinger (hereinafter the '254 application). The '254 application did not claim priority to any prior domestic or foreign patent applications. Thus, Howard's effective date is **4 January 2000**. As discussed further below, we conceived of, and reduced to practice, our invention disclosed and claimed in the above-referenced patent application prior to this effective date. The events discussed below concerning our conception and reduction to practice all took place in the United States.

8. The following support for our assertion of conception and reduction to practice prior to 4 January 2000 is presented in two steps. First, we demonstrate that the independent claims in our above-referenced application are entitled to the **19 January 2000** filing date of our

priority case – United States provisional utility patent application no. 60/176,983 (hereinafter the ‘983 priority application), which also names the three of us as the inventors. Second, we use attached Exhibits 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10, each of which is explained further below, to demonstrate our conception and reduction to practice of the invention claimed in our above-referenced application before Howard’s **4 January 2000** effective date (i.e., at least sixteen (16) days before we filed the ‘983 priority application).

I **Entitlement to the 19 January 2000 Filing Date of the ‘983 Priority Application**

9. The independent claims remaining in the captioned application are claims 1, 2, 13, and 21. Each of these claims is clearly entitled to the 19 January 2000 filing date of the ‘983 priority application for at least the reasons detailed in the follow paragraph nos. 10 to 25.

Claim 1

10. Support for limitation (a) (“at least one personal information portal having access to an active engine, an information service, and a persistent storage service”) may be found at least at the following locations in the ‘983 priority application: page 1, lines 9-13¹; page 8, lines 1-11; page 10, Fig. 4; page 13, lines 3-11 and 16-19; and screenshots on pages 23-27.

11. Support for limitation (b) (“said active engine associated with a datasource, a workflow, and a relation; said active agent being related to an individual's role within at least one enterprise”) may be found at least at the following locations in the ‘983 priority application: page 8 lines 1-24; page 9, lines 6-18 and lines 31-41; page 10, lines 8-11; and page 10, Figs. 4 and 5.

12. Support for limitation (c) (“said relation associated with a rule and an association”) may be found at least at the following locations in the ‘983

¹ For the Examiner’s convenience, the Applicants have attached as Exhibit 11, a copy of the ‘983 priority application to which line numbering has been added. The Applicants believe that this line-numbered copy of the ‘983 priority application is substantively identical to the ‘983 application as originally filed on 19 January 2000, including all line and page breaks. The line numbering was added to assist the Examiner in locating the portions of the ‘983 priority application referred to in paragraphs 10-25.

priority application: page 10, Fig. 4; page 11, lines 27-36; and page 12, lines 1-20.

13. Support for limitation (d) (“said workflow associated with a command and an action”) may be found at least at the following locations in the ‘983 priority application: page 10, Fig. 4; and page 12, lines 22-41.
14. Support for limitation (e) (“said datasource associated with a category”) may be found at least at the following locations in the ‘983 priority application: page 10, Fig. 4; page 11, lines 9-26; page 15, lines 11-20 and Fig. 6; page 16, lines 1-5; and page 17, Fig. 8.

Claim 2

15. Support for the limitation, “at least one personal information portal wherein the personal information portal indicates an individual within the enterprise and comprises,” may be found at least at the following locations in the ‘983 priority application: page 1, lines 9-11 and 34-35; page 2, lines 10-18 and Fig. 1; page 8, lines 1-3, 8-11, 15-16, and 32-37; page 9, lines 34-38; page 12, lines 17-19; page 13, lines 3-19, 24-27, and 31-39; page 14, lines 1-15; page 15, Fig. 6 and lines 12-14; and page 18, lines 11-12.
16. Support for the limitation, “a storage mechanism configured to store information and a role of the individual wherein the role indicates first relationships of the individual with sources of the information and with at least one function that the individual performs within the enterprise,” may be found at least at the following locations in the ‘983 priority application: page 7, lines 16-29; page 9, lines 9-19; page 10, lines 1-2, 7-12, Fig. 4, and Fig. 5; page 11, lines 1-8 and 20-36; page 12, lines 1-29; page 13, lines 4-5, 14-15, 24-27, and 31-39; page 14, lines 1-15; page 15, Fig. 6; and page 17, lines 1-8, Fig. 8, and Fig. 9.

17. Support for the limitation, “an active agent configured to retrieve the role from the storage mechanism, exchange the information with the storage mechanism and the sources of the information based on the role, and process the information based on the role,” may be found at least at the following locations in the ‘983 priority application: page 1, lines 9-13; page 7, lines 16-29; page 8, lines 1-11; page 10, lines 7-11, Fig. 4, and Fig. 5; page 11, lines 1-8; page 12, lines 23-42; page 13, lines 3-19, 24-27, and 31-39; page 14, lines 1-15; and page 15, lines 11-20 and Fig. 6.

Claim 13

18. Support for the preamble, “an active information model for an enterprise wherein the active information model comprises at least one personal information portal that indicates an individual within the enterprise,” may be found at least at the following locations in the ‘983 priority application: page 1, lines 7-11 and 32-35; page 2, lines 10-18 and Fig. 1; page 4, lines 10-12; page 5, lines 1-5; page 6, lines 8-13; page 7, lines 16-29; page 8, lines 1-11, 15-24, and 32-37; page 9, lines 6-18, 26-29, and 34-41; page 10, lines 1-12 and Fig. 4; page 11, lines 1-8 and 20-36; page 12, lines 17-19 and lines 24-28; page 13, lines 3-11, 24-27, and 31-39; page 14, lines 1-15, lines 18-34, and Table 2; page 15, Fig. 6 and lines 12-14; page 16, lines 20-26; page 17, Fig. 8 and lines 1-7; page 18, lines 11-12; and page 19, lines 7-8 and 25-26.
19. Support for the limitation, “storing a role of the individual in a storage mechanism within the personal information portal wherein the role indicates first relationships of the individual with sources of information and functions that the individual performs within the enterprise,” may be found at least at the following locations in the ‘983 priority application: page 7, lines 16-29; page 10, lines 8-11, Fig. 4, and Fig. 5; page 11, lines 1-8 and 20-36; page 12, lines 1-29; page 13, lines 8-15 and lines 24-27; page 14,

lines 17-34 and Table 2; page 15, lines 11-20 and Fig. 6; page 16, lines 1-5; and page 17, lines 1-7 and Fig. 8.

20. Support for the limitation, “in an active agent included within the personal information portal, retrieving the role of the individual from the storage mechanism,” may be found at least at the following locations in the ‘983 priority application: page 1, lines 9-13; page 7, lines 16-30; page 8, lines 1-11; page 10, lines 7-11 and Fig. 4; page 11, lines 1-8; page 12, lines 23-42; page 13, lines 3-15 and 24-27; page 14, lines 30-34 and Table 2; page 15, lines 11-20 and Fig. 6; and page 16, lines 1-5.
21. Support for the limitation, “in the active agent, exchanging the information with the storage mechanism and the sources of the information based on the role,” may be found at least at the following locations in the ‘983 priority application: page 7, lines 16-30; page 12, lines 24-42; page 13, lines 3-19 and 24-39; page 14, lines 1-34; page 15, lines 11-20 and Fig. 6; page 16, lines 1-25; and page 17, Fig. 8 and lines 1-7.
22. Support for the limitation, “in the active agent, processing the information based on the role,” may be found at least at the following locations in the ‘983 priority application: page 7, lines 16-30; page 12, lines 24-42; page 13, lines 3-15 and 24-27; page 14, lines 1-3, lines 8-11, lines 18-34, and Table 2; page 15, lines 11-20 and Fig. 6; page 16, lines 1-5; and page 17, Fig. 8, Fig. 9, and lines 1-7.

Claim 21

23. Support for the preamble, “an active information model for an enterprise wherein the active information model comprises at least one personal information portal that indicates an individual within the enterprise and comprises a storage mechanism and an active agent,” may be found at least at the following locations in the ‘983 priority application: page 1, lines 7-11 and 32-35; page 2, lines 10-24 and Fig. 1; page 4, lines 10-12; page 5, lines

1-5; page 6, lines 8-29; page 7, lines 16-30; page 8, lines 1-37; page 9, lines 6-18, 26-29, and 34-41; page 10, lines 1-12, Fig. 4, and Fig.5; page 11, lines 5-8; page 12, lines 18-29; page 13, lines 3-27, and 31-39; page 14, lines 1-34 and Table 2; page 15, Fig. 6 and lines 12-20; page 15, lines 20-26; page 17, Fig. 8 and lines 1-7; page 18, lines 11-12; page 19, lines 7, 8, 25, and 26; and screenshots on pages 23-27.

24. Support for the limitation, “active agent software operational when executed by a processor to direct the processor to retrieve a role from the storage mechanism, exchange information with the storage mechanism and sources of the information based on the role, and process the information based on the role wherein the role indicates first relationships of the individual with the sources of the information and functions that the individual performs within the enterprise,” may be found at least at the following locations in the ‘983 priority application: page 5, lines 1-5; page 7, lines 16-30; page 8, lines 1-11; page 9, lines and 31-42; page 10, lines 1-12 and Fig. 4; page 11, lines 1-37; page 12, lines 1-42; page 13, lines 1-39; page 14, lines 1-15 and 31-33; page 15, Fig. 6 and lines 12-20; page 17, Fig. 8 and lines 1-7; page 18, lines 11-12; and screenshots on pages 23-27.
25. Support for the limitation, “a software storage medium operational to store the active agent software,” may be found at least at the following locations in the ‘983 priority application: page 1, lines 7-11 and lines 32-35; page 5, lines 1-5; page 7, lines 16-30; page 8, lines 1-11 and lines 32-37; page 10, Fig. 4; page 11, lines 15-19; page 13, lines 3-12 and 24-39; page 14, lines 1-15; and page 19, lines 7-8 and 25-26.

II

**Conception and Reduction to Practice Prior to the 4 January 2000
Effective Date of Howard**

26. In further support of our claim of conception and reduction to practice prior to Howard's 4 January 2000 effective date (i.e., at least sixteen (16) days before we filed the '983 priority application), we have attached hereto Exhibits 1-10. Each of these exhibits is explained further below.

27. Exhibit 1, entitled, "Notes on dsH™ Patent," comprises a 24 September 1999 printout of "Revision 1.0" of our notes related to this invention. The acronym "dsH" stands for "data source harmonizer." The electronic file that became the document attached as Exhibit 1 was originally created by Mho Salim on 5 July 1999. Revision 1.0 of this original electronic file was completed by Mho Salim on 15 July 1999 (see Exhibit 1, page 1). In particular, as noted on the first page of this exhibit, this revision of the notes reflects a discussion that occurred on 14 July 1999 concerning ways to use the Applicants' invention to create a "computer system" for the Internet that any user can access and possible approaches to patenting this invention. In 1999, Corybant was supporting a "paperless philosophy" and, as a result, Revision 1.0 may or may not have been printed on 15 July 1999, which is something that we cannot confirm at this time. We were, however, able to find among our paper files the attached printout of Revision 1.0, which was printed on 24 September 1999. We are certain that Exhibit 1 is a photocopy of a document that was originally printed on 24 September 1999 since we had our electronic files configured with a "date field" on each page and that field changed depending on the day the file was opened. Essentially, the version of the notes attached as Exhibit 1 outlines the invention in basic patent application style, including a discussion of roles, rules, associations, workflow, and other aspects of our claimed invention. We have included this particular version of the notes since it clearly supports and discloses the invention claimed in our above-referenced patent application. Also, the term "user-centric," which describes an important aspect of our currently claimed invention, was created and used during the 14 July 1999 meeting.

28. Exhibit 2, entitled, "Notes on dsHII," comprises a redacted photocopy of an 11 October 1999 version of some notes on the Applicants' claimed invention in view of an idea

presented by one of the named inventors, Ron Barber, on 8 October 1999. In particular, these notes relate to what was deemed at the time the next generation harmonizer for making the dsH web-based and introducing the concept of personal portals to deliver distributed information services and thereby provide users with a virtual office they can access from anywhere. The redacted material includes financial and strategic information that is not particularly relevant to the conception and reduction to practice of our claimed invention. The first page of Exhibit 2 depicts a screenshot showing the document properties overlaid onto the first page of the document. As may be seen, the electronic file corresponding to the document that is attached as Exhibit 2 was both created and last modified on 11 October 1999. As may also be seen from reviewing the second and third pages of Exhibit 2, the document that is attached as Exhibit 2 is a photocopy of the document that was printed on 11 October 1999.

29. Exhibit 3, entitled, "Business Summary Brief," comprises a redacted copy of a 6 December 1999 version of our business plan for funding an Internet business of personal portals. Again, the redacted material includes financial and strategic information that is not particularly relevant to our conception and reduction to practice of the claimed invention. By the date of this document, we had a working version of the invention and were working on commercialization issues. The first page of Exhibit 3 depicts a screenshot showing the document properties overlaid onto the first page of the document. As may be seen, the electronic file corresponding to the document that is attached as Exhibit 3 was originally created on 6 December 1999 and was last modified on 13 December 1999. As may be seen from reviewing pages 2-6 of Exhibit 3, the document that is attached as Exhibit 3 is a photocopy of a document that was printed on 6 December 1999. Again, we are certain that Exhibit 3 is a photocopy of a document that was originally printed on 6 December 1999 since we had our electronic files configured with a "date field" on each page and that field changed depending on the day the file was opened.

30. Exhibit 4 comprises an 11 December 1999 version of our notes on the claimed invention. This exhibit is similar to, but slightly different from, Exhibit 1. In particular, we believe this comprises Revision 3.0 of our invention notes, which was originally completed around mid-September of 1999. In view of our above-mentioned "paperless philosophy," we cannot confirm at this time whether this revision was printed earlier than 11 December 1999, and

we do not currently believe we need to establish such an early date for our invention. Again, we are certain that Exhibit 4 is a copy of a document that was originally printed on 11 December 1999 since we had our electronic files configured with a “date field” on each page and that field changed depending on the day the file was opened. The document again discusses the dsH engine, including the concepts for roles, rules, associations, workflow, and other aspects of our claimed invention. This version of our notes supports and discloses the invention claimed in our above-referenced patent application.

31. Exhibit 5 is a communication from DSC concerning our purchase of the “myPIP.net” domain name via Corybant. Named inventor Mho Salim’s name appears under the “Administrative Contact” information. Although this document does not directly support our conception and reduction to practice of the claimed invention, it does indirectly support the fact that we had reduced our invention to practice by December of 1999 since we acquired “myPIP.net” on 11 December 1999 for our working “prototype” of the claimed invention.

32. Exhibit 6 is a 14 December 1999 screenshot of “myPIP.net” for marketing personal information portals. This document again support the fact that we had reduced our claimed invention to practice by December of 1999 since we had designed presentations for marketing the invention. This exhibit also directly supports the conception and reduction to practice of some aspects of our claimed invention. The first page of Exhibit 6 is a screenshot showing the document properties overlaid onto the document. As may be seen, the electronic file corresponding to the document that is attached as Exhibit 6 was originally created on 14 December 1999 and was last modified on 14 December 1999.

33. Exhibit 7, entitled, “Business Summary,” is a redacted copy of a 13 December 1999 business summary prepared for CVC and other potential funding sources. Again, the redacted material includes financial and strategic information that is not particularly relevant to our conception and reduction to practice of the claimed invention. The first page of Exhibit 7 depicts a screenshot showing the document properties overlaid onto the first page of the document. As may be seen, the electronic file corresponding to the document that is attached as Exhibit 7 was both originally created on and was last modified on 13 December 1999. As may also be seen from reviewing pages 2-4 of Exhibit 7, the document that is attached as Exhibit 7 is

a copy of a document that was printed on 13 December 1999. Again, we are certain that Exhibit 7 is a photocopy of a document that was originally printed on 13 December 1999 since we had our electronic files configured with a “date field” on each page and that field changed depending on the day the file was opened.

34. Exhibit 8 is a redacted copy of a 16 December 1999 Microsoft® Office PowerPoint® presentation describing the business opportunity of Internet active personal information portals that deliver services using the dsH engine of our claimed invention. Again, the redacted material includes financial and strategic information that is not particularly relevant to our conception and reduction to practice of the claimed invention. The first page of Exhibit 8 depicts a screenshot showing the document properties overlaid onto a number of presentation slides. As may be seen, the electronic file corresponding to the document that is attached as Exhibit 8 was originally created on 25 March 1999 and was last modified on 27 December 1999. As may also be seen from reviewing pages 1 and 3-13 of Exhibit 8, the document that is attached as Exhibit 8 is a copy of a document that was printed on 16 December 1999. Again, we are certain that Exhibit 8 is a photocopy of a document that was originally printed on 16 December 1999 since we had our electronic files configured with a “date field” on each page and that field changed depending on the day the file was opened.

35. Exhibit 9 is a redacted copy of a 14 December 1999 printout from a spreadsheet containing research on a list of domain names available to support implementation of our claimed invention. Again, the redacted material includes financial and strategic information that is not particularly relevant to our conception and reduction to practice of the claimed invention. The first page of Exhibit 9 depicts a screenshot showing the document properties overlaid onto the spreadsheet. As may be seen, the electronic file corresponding to the document that is attached as Exhibit 9 was originally created on 13 December 1999 and was last printed on 14 December 1999. As may also be seen from reviewing the first page of Exhibit 9, the document that is attached as Exhibit 9 is a copy of a document that was printed on 14 December 1999.

36. Exhibit 10 is a redacted copy of a 27 December 1999 printout from a spreadsheet, showing potential services to be offered through the personal information portal. Again, the

redacted material includes financial and strategic information that is not particularly relevant to our conception and reduction to practice of the claimed invention, including estimated pricing for the business model. The first page of Exhibit 10 depicts a screenshot showing the document properties overlaid onto the spreadsheet. As may be seen, the electronic file corresponding to the document that is attached as Exhibit 10 was originally created on 6 December 1999 and was last printed on 27 December 1999. Clearly, we had reduced our invention to practice since we were analyzing how to profitably exploit the invention that we had created. A review of the second page of Exhibit 10 confirms that the document that is attached as Exhibit 10 is a copy of a document that was printed on 27 December 1999.

37. The independent claims remaining in the application are claims 1, 2, 13, and 21. The attached exhibits clearly support the conception and reduction to practice of the limitations in these claims as detailed in the follow paragraph nos. 38 to 53.

Claim 1

38. Support for our asserted reduction to practice of limitation (a) (“at least one personal information portal having access to an active engine, an information service, and a persistent storage service”) may be found in at least the following exhibits: 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10.
39. Support for our asserted reduction to practice of limitation (b) (“said active engine associated with a datasource, a workflow, and a relation; said active agent being related to an individual's role within at least one enterprise”) may be found in at least the following exhibits: 1, 2, 3, 4, 7, and 8.
40. Support for our asserted reduction to practice of limitation (c) (“said relation associated with a rule and an association”) may be found in at least the following exhibits: 1, 4, and 8.
41. Support for our asserted reduction to practice of limitation (d) (“said workflow associated with a command and an action”) may be found in at least the following exhibits: 1, 4, and 8.

42. Support for our asserted reduction to practice of limitation (e) (“said datasource associated with a category”) may be found in at least the following exhibits: 1, 4, and 8.

Claim 2

43. Support for our asserted reduction to practice of the limitation, “at least one personal information portal wherein the personal information portal indicates an individual within the enterprise and comprises,” may be found in at least the following exhibits: 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10.

44. Support for our asserted reduction to practice of the limitation, “a storage mechanism configured to store information and a role of the individual wherein the role indicates first relationships of the individual with sources of the information and with at least one function that the individual performs within the enterprise,” may be found in at least the following exhibits: 1, 2, 3, 4, 6, 7, 8, and 10.

45. Support for our asserted reduction to practice of the limitation, “an active agent configured to retrieve the role from the storage mechanism, exchange the information with the storage mechanism and the sources of the information based on the role, and process the information based on the role,” may be found in at least the following exhibits: 1, 2, 3, 4, 7, and 8.

Claim 13

46. Support for our asserted reduction to practice of the preamble, “an active information model for an enterprise wherein the active information model comprises at least one personal information portal that indicates an individual within the enterprise,” may be found in at least the following exhibits: 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10.

47. Support for our asserted reduction to practice of the limitation, “storing a role of the individual in a storage mechanism within the personal information portal wherein the role indicates first relationships of the individual with sources of information and functions that the individual performs within the enterprise,” may be found in at least the following exhibits: 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10.
48. Support for our asserted reduction to practice of the limitation, “in an active agent included within the personal information portal, retrieving the role of the individual from the storage mechanism,” may be found in at least the following exhibits: 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10.
49. Support for our asserted reduction to practice of the limitation, “in the active agent, exchanging the information with the storage mechanism and the sources of the information based on the role,” may be found in at least the following exhibits: 1, 2, 3, 4, 7, and 8.
50. Support for our asserted reduction to practice of the limitation, “in the active agent, processing the information based on the role,” may be found in at least the following exhibits: 1, 2, 3, 4, 7, and 8.

Claim 21

51. Support for our asserted reduction to practice of the preamble, “an active information model for an enterprise wherein the active information model comprises at least one personal information portal that indicates an individual within the enterprise and comprises a storage mechanism and an active agent,” may be found in at least the following exhibits: 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10.
52. Support for our asserted reduction to practice of the limitation, “active agent software operational when executed by a processor to direct the processor to retrieve a role from the storage mechanism, exchange information with

the storage mechanism and sources of the information based on the role, and process the information based on the role wherein the role indicates first relationships of the individual with the sources of the information and functions that the individual performs within the enterprise," may be found in at least the following exhibits: 1, 2, 3, 4, 7, and 8.

53. Support for our asserted reduction to practice of the limitation, "a software storage medium operational to store the active agent software," may be found in at least the following exhibits: 1, 2, 3, 4, 6, 7, 8, and 10.

54. In view of the above discussion and the attached Exhibits 1-10, we believe we have demonstrated our conception and reduction to practice prior to 4 January 2000. Additional documents are available if further support is required.

FURTHER DECLARANTS SAYETH NOT.

Declaration

Mohammad S. Salim, being hereby warned that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of this application or any patent resulting therefrom, declares that all statements made of his own knowledge are true and all statements made on information and belief are believed to be true.

Signed at Englewood, Colorado on this 24 day of February, 2005.





Express Mail Label No. EV 378 321 346 US
Attorney Docket no. 023-040001US
Serial no. 09/765,964

Declaration

Barbara J. Rossner, being hereby warned that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of this application or any patent resulting therefrom, declares that all statements made of her own knowledge are true and all statements made on information and belief are believed to be true.

Signed at Arvada, Colorado on this 24 day of February, 2005.

A handwritten signature in black ink, appearing to read "Barbara J. Rossner".

Declaration

Ronald M. Barber, being hereby warned that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of this application or any patent resulting therefrom, declares that all statements made of his own knowledge are true and all statements made on information and belief are believed to be true.

Signed at _____, Colorado on this _____ day of February, 2005.

A horizontal line intended for a handwritten signature.



Express Mail Label No. EV 378 321 346 US
Attorney Docket no. 023-040001US
Serial no. 09/765,964

Declaration

Barbara J. Rossner, being hereby warned that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of this application or any patent resulting therefrom, declares that all statements made of her own knowledge are true and all statements made on information and belief are believed to be true.

Signed at Denver, Colorado on this 24 day of February, 2005.

Declaration

Ronald M. Barber, being hereby warned that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of this application or any patent resulting therefrom, declares that all statements made of his own knowledge are true and all statements made on information and belief are believed to be true.

Signed at Denver, Colorado on this 24 day of February, 2005.

A handwritten signature in black ink, appearing to read "Ronald M. Barber".

Notes on dsHTM Patent

These notes reflect the discussions with Diane Wunnicke on July 14, 1999 on possible approach to patenting the dsHTM concepts. Current plan is to use these notes as the basis for discussion with Robert Dorr Esq. when we enlist his help for the filing. I am using the format from US Patent number 5640546 with the following general mapping of topics:

Topic	Section of the document
Overall Description of the purpose of the invention	FIELD OF THE INVENTION
Current art (how the problem is being addressed today)	BACKGROUND OF THE INVENTION
Overall description of the differences between this approach and the current approach	SUMMARY OF THE INVENTION
A preliminary list of claims	DETAILED DESCRIPTION
First intended application of the invention	Details
Services needed to reduce this invention to practice	Details

Revision history

Mho Salim	Revision 1.0	July 15, 1999	Rough draft, general ideas This draft is submitted as a check point. Please do not bother to review it as its will be modified after I have reviewed some existing patents.
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FIELD OF THE INVENTION

This invention relates generally to processes governing the implementation of a collaborative computing environment within an enterprise and, more specifically, to a core software component which enables this implementation of this environment.

The invention is a virtual interactive system that is not dependent on any server or any specific apparatus. The electronic is required for the users of the system but the system is not dependent on any apparatus. The users define the parameters that govern the system.

Because processes always changing to implement it is to model it into an active system which is continually updated and provides interactive agent based support.

Turning any number of computers and workstations into a coherent system.

Continuous definable update cycles.

User control cycles

No hardware box in the middle

The system is the collective of the users and data sources and apparatus

It is a system defined by the users

Information processing of the system is a function of its users, the data sources and apparatus and input and output they define.

The users are the computer... the system

Distributed intelligent system

Turn each human into a part of the computer

Optimizing relationships

Users provide application developers with information about how the system works.

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BACKGROUND OF THE INVENTION

To Harmonize: To adjust in fit proportions; to cause to agree; to show the agreement of; to reconcile the apparent contradiction of.
(From Webster's Revised Unabridged Dictionary 1913)

Let us use the process of building an information system for a home care agency as an example in describing the background of this invention. The mission of this home care organization is: "to provide a comprehensive range of home care services to the community and strive for the highest level of professional and technical competence in those services".

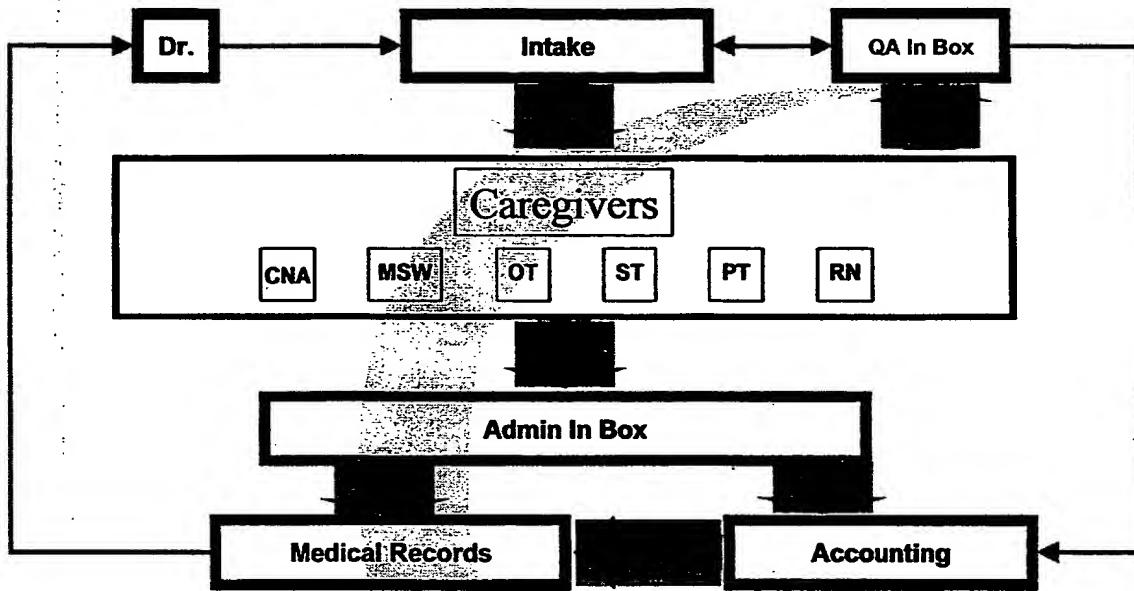


Figure 1. Organizational view of an Information system for a home care agency

Within this organization, policies regarding formal flow of information are based on:

- Agreements among individuals and groups,
- Job assignments,
- Government regulations,
- Policies of payers.

It is important to recognize that these policies are NOT based on implementation considerations of the electronic data processing and communication equipment.

Moving towards automation

However, the management understands that information management represents a significant portion of the organization's responsibilities and proper use of state of the art technology in information management can improve quality and reduce operating cost. The management has identified a key focus area for process improvement to be automation. The management has specified a goal to: *"develop a strategic plan and budget to support the automation of core business processes. This includes tactical planning for interim computer operations, and the evaluation of appropriate available computer technology in moving toward an electronic patient record and total electronic bill generation"*.

On the average, the life span of an automation tool is about 1/2 to 1/3 the time that it takes an organization to make a significant change in its operating processes. Given the above statement of objectives and the organization's current state of operational reality, it seems inevitable that the organization will move toward higher degrees of automation in phases. A traditional decision process to prioritize the goals of each phase of automation follows the support model that is demonstrated in figure 2.



Figure 2. Decision support model based on state of technology

This model identifies the elements of the decision process and highlights the relationships between these elements. It demonstrates the following principals:

1. The overall objective is to improve the effectiveness of the organization toward performance of its mission (home care).
2. Requirements for each phase of automation are driven by the need to automate some portion of the business.
3. The specific goals of each phase of automation will be determined by the individuals or groups who are impacted and the state of tools and services that are affordable to the organization.
4. The allocation of resources to each phase of automation will be driven by the realities of the business and the available technologies.

This is a commonly used model and somewhat intuitive however it is heavily biased toward technological considerations at the expense of organization's need to plan and execute its long term goals. From this respect, decisions based on this consideration tend to create conflict between the users and technical service providers.

An alternate model that is to a great degree impervious to technology changes is demonstrated in figure 3. Given such a model, the decision process for each phase of automation can be a continuation of the overall process of business automation and can benefit from the lessons learned from previous phases. Technology considerations, which are by nature variable, are still included in the process of implementing the infrastructure but they do not govern the process of automation.

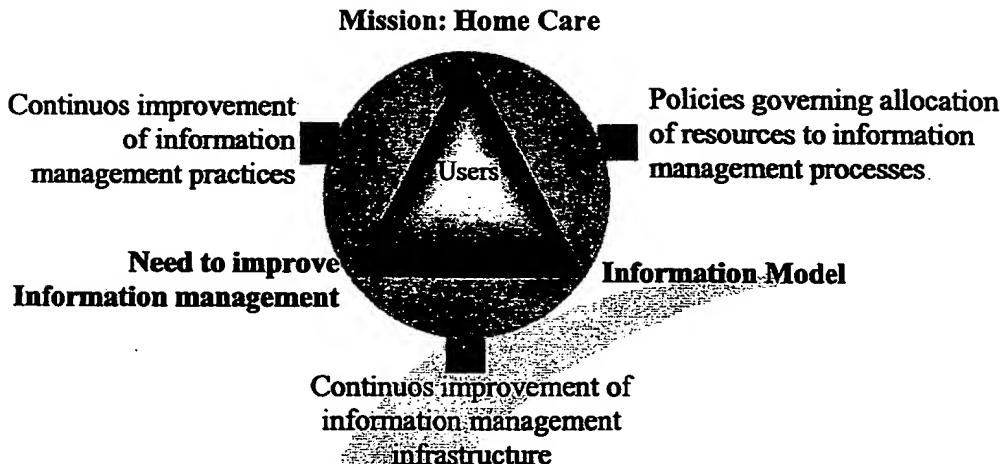


Figure 3. Decision support model based on business considerations

In the case where the organization makes its decisions on the basis of the Information Model rather than technology, the key considerations are changed to satisfy the need for continuous improvement and at the same time recognize the limitations of the available technologies:

- The overall objective is to improve the effectiveness of the organization toward performance of its mission (home care).
- Requirements for each phase of automation are driven by the organization's overall need to improve the ability to manage its information base.
- The specific goals of each phase of automation will be determined by balancing the need to improve information management practices and affordability of the underlying technology.
- The allocation of resources to each phase of automation will be driven by the realities of the business and the long-term strategy to move toward automation.

Traditional implementations of information systems fail to accommodate this need because they are based on a view of one or more information-processing engine (computers and workstations) as the central component of the information management system. The invention that is being described in these notes makes it possible to put the needs of the users of the information system in the center of the decision support process.

SUMMARY OF THE INVENTION

The primary function of the invention is creation and continuous improvement of an information system by the users of this computer system and based on the requirements of the practices that have brought about the need for the information system. This function is made possible through implementing an Information Model that:

- Identifies the individual roles within the organization
- Identifies location and characteristics of sources and destination of the information elements that are used or created by each role (the relationship of each role to the data)
- Specifies the rules of translation between elements of data, from the perspective of each individual role.
- Specifies actions that are taken by each role relative to the information (the relationship of roles to one another).

The core components of the invention are:

1. A persistent record that describes above information for each role: Configuration
2. A software program that uses this information to perform the specified actions for each role: Engine.

BRIEF DESCRIPTION OF THE DRAWING

This section will be completed in later revisions

DETAILED DESCRIPTION

Information Model

To be of value in the decision process, an information system must be easy to implement and adaptable to emerging technologies and changing business needs. Its successful implementation incorporates knowledge of the roles of the individuals and workflow within the enterprise. Additionally, it is necessary to implement such an information system incrementally, allowing for the fact that at all times different parts of the enterprise will be at different levels of operational and technological maturity.

The four basic elements of the invention reflect these concepts in such a way as to facilitate a formal process for creation and maintenance of an Information Model. These elements are Roles, Data Sources, Relations, and Workflow.

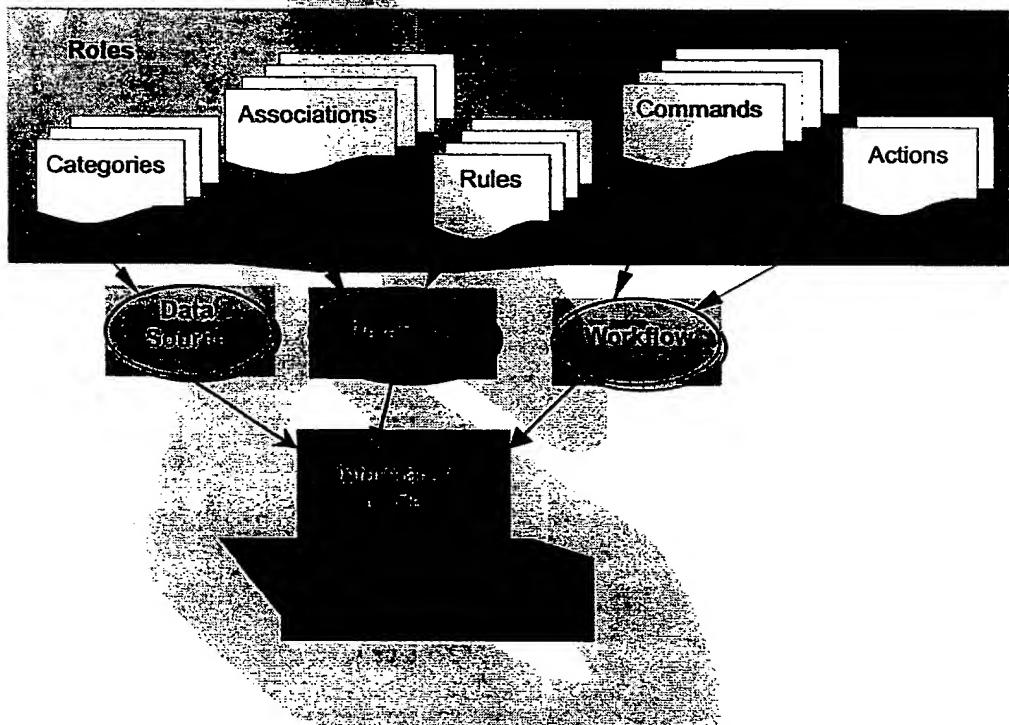


Figure 4-Basic dSH™ Concepts

The invention provides for definition and utilization of these elements, to the extent that is necessary to create and maintain an Information Model. The focus of the invention is on accuracy of this model and two key qualities of the resulting information system i.e. serviceability and potential for change. Other key qualities of the information system (performance, security, and availability) will reflect the behavior of the implementation platforms.

Roles

The invention provides a mechanism to define a role by specifying the activities that an individual in the organization will require of the information system, in the course of fulfilling an assignment. For example the following statement is a part of the definition of a role:

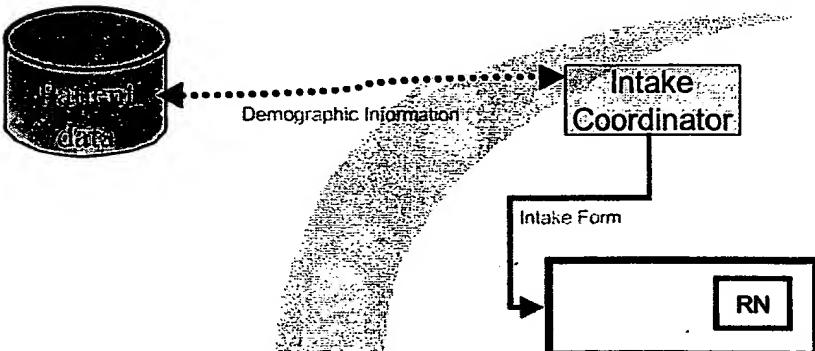


Figure 5 Defining the Intake Coordinator Role

"To open a case the Intake Coordinator copies the patient demographic information from patient database into the Intake Form and sends this form to the RN." This statement identifies the following elements of the Information Model:

Data sources		Patient Database and Intake Form
Reference model		the collection of the data fields that describe Patient Demographic information and their relationship to the fields in the Intake Form
Commands		select information defined by patient demographic and insert this information into the appropriate fields in intake form
Action		Open a Case.

Table 1: Elements of the Intake Coordinator Role

By defining a role in this way, the external points (to the Information system) where information is created or used are identified. In abstract a role may be described as "external interfaces of the information system". Figure 5 shows a practical view of a role as a particular aggregation of the internal elements of the information system.

Data sources

Data source is an abstract concept that encapsulates the sources and destinations of the information. We have used the generic term data source, in recognition of Microsoft's ODBC and OLEDB initiatives, which are significant contributors to the computer industry's ability to share information between disparate systems. Our use of this term, however, is broader than Microsoft's. We look at data sources as elements of the entire enterprise rather than a component of the computing environment within the enterprise.

A data source, as a fundamental element of an Information Model refers to any component of the overall organization where information is stored and is made available according to a well-defined set of rules.

Practically, for the purposes of the invention, a data source is defined as any data storage mechanism within the information system for which a formal interface definition is available. This includes databases and application specific file formats and other Engines.

Categories

A data source is identified within a role as a category. A category within a role identifies the data sources that are used how to get to them and the way the information within a category is to be treated. For example a category may be a real database located at a particular location on a network, a reference schema that describes the way data should be organized, a facade: a view of data into another data source or a report that should be printed or mailed

Relations

Relations are attributes of an Information Model that are concerned exclusively with the relationship between the elements of data sources. Relations include associations and rules.

Associations

An association is a relationship between fields of data sources. For example element "name" in data source A is the same as element "Patient Name" in data source B. It is important to realize that an association is not a movement of data. From that perspective there is no implication of order within the concept of association.

Rules

This section will be completed in later revisions

Workflow

The Workflow Management Coalition (WFMC) defines workflow as: "The computerized facilitation or automation of a business process, in whole or part". Corybant uses the phrase workflow to refer to the attributes of an Information Model that are concerned with movement of information between different data sources.

Commands

This section will be completed in later revisions



Actions

This section will be completed in later revisions

The Engine

The Engine is an Active component that moves information between various data sources within a network. A "data source" can be any collection of data for which a provider can be created (such as a tab separated files, spreadsheets, or fields in a form, or a table in a relational database). An Engine can see data sources through other Engines and can send and receive events.

The Engine may be used as a single utility that simplifies access to various data sources for a single user or device. An example of this kind of application may be a report that is created in a document that uses information from various databases, PACS systems and Hospital Information Management systems. Another example may be a protocol converter for a device within a health information management system. The Engine may also be used as a member of a collection of Engines and facilitate workflow as well as information access. An example of such an application is a Long-Term Care environment where various healthcare professionals communicate with each other through sending and receiving pre-specified forms. Each Engine uses a configuration model file that specifies its associated datasources, trigger events, and mapping rules.

Using the Engine a user of a networked workstation can input, export and review information from different databases or documents. The user interface may be desktop applications, Word processors, spreadsheet programs and personal information management applications (such as e-mail or contact managers) as well as many commercially available special purpose applications.

Details

Information Modeling

Information Modeling is the process of maintaining a formal description of how information within an enterprise is created, who creates it, and in what forms it is used. Ultimately an Information Model is a tool that will help with the process of continuously improving the operation of the organization. As a tool of process improvement, the Invention offers four key concepts that are somewhat independent and at the same time collectively provide a complete definition. These key concepts are identified in this section:

- Roles: The complete definition of the creators and users of information
- Categories: Data sources, schema presentation formats of data containers.
- Messages: Information transport media
- Actions: Events that govern transmission of messages between roles

These concepts are “abstractions” in the sense that each of them is a convenient aggregation of ideas and practices that satisfy the needs of a particular view within the enterprise.

Roles

The most basic concept in the Invention is the concept of a Role. A Role is a description of a collection of assignments, usually associated with an individual or group with a specific set of credentials. Table 2 is an overview of the relationship between a role and the flow of information.

Abstraction	Described in terms of...
Role	Qualifications of the individuals e.g. Registered Nurse, Certified Records Administrator
Assignments	Objectives described qualitatively e.g. Admit a patient, Maintain patient records.
Tasks	Measurable goals e.g. complete intake form, perform initial case assessment.

Table 2

To satisfy the needs of creating and maintaining an Information Model, identification of a given role is sufficient. In fact deeper abstractions will create an obstacle to exploring alternative approaches within the overall objective of continuous improvement. This is in contrast, for example, to the process of application development where it is necessary to categorize the tools that are needed in performing each task.

The fact that the end users of the Invention product are practitioners within a regulated industry makes the concept of a “Role” a key concept in Information Modeling. Within this industry, the qualification of an individual practitioner, more than the business considerations, determines the assignments that they can accept and the information that they need in order to meet the objectives of those assignments.

Categories

Within the organization, however, different roles can collaborate because they share *perspectives* on information. A *perspective* is an agreement on how to view information. A *category* is an abstraction that identifies a “view” of the information that may be useful to a group of perspectives.

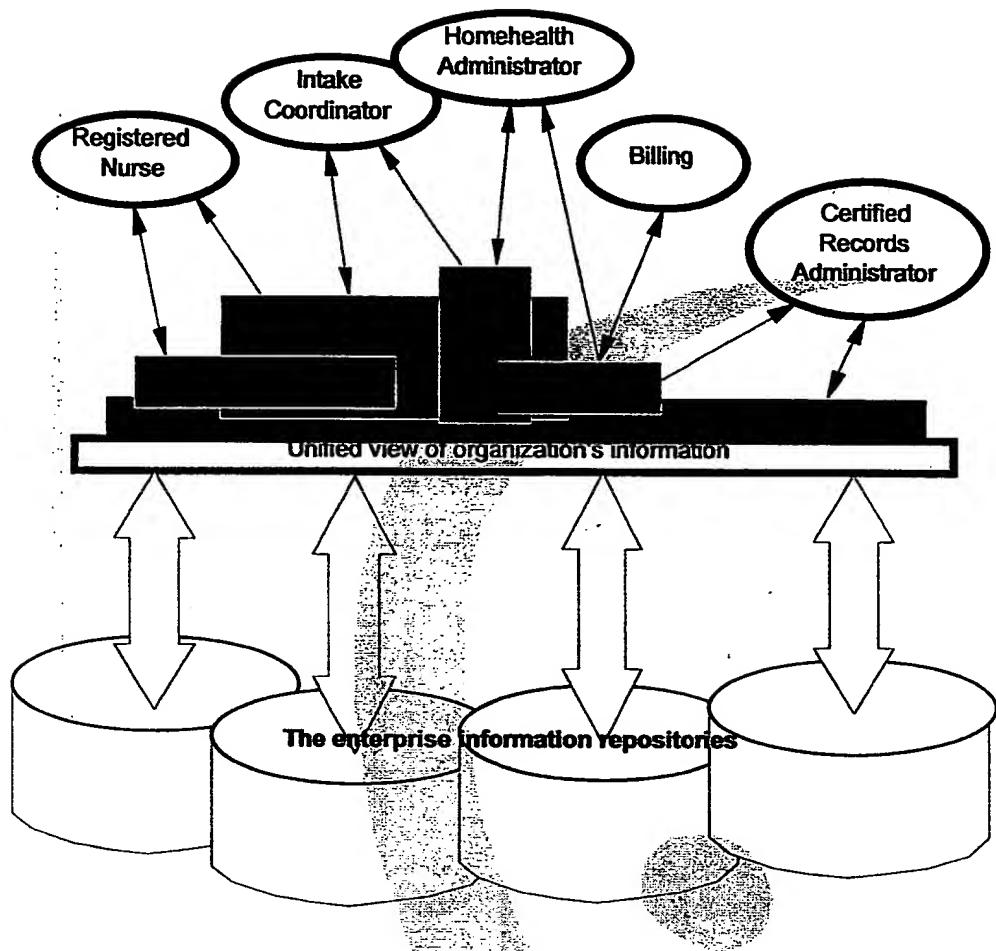


Figure 6 Perspectives and Views of Information

Using this framework, the following concepts are of interest in defining categories.

- Data repositories
- Data repositories as viewed through roles
- Reference categories
- Facades

The first two concepts are concerned with the sources of information whereas the last two deal with creation and maintenance of the Information Model itself. A good general rule is that design of an Information Model is that reference categories are inventions that facilitate dealing with data repositories and facades are inventions that facilitate dealing with roles.

Data repositories

For the purposes of Information Modeling any persistent medium that may contain information is a data repository. For practical purposes the information flow in and out of a given data repository is subject to its specific characteristic. For example in the context of an automated document management system, a hand written document that will be stored as a part of patient's medical record is a valid data repository with a somewhat complex interface rules. For the purposes of Information Models related to the use of the Invention, machine accessible data repositories are the primary consideration.

Repositories viewed through roles

For all purposes, roles appear as sources of information to other roles. In practice, however, it is the view of information from within a role that is of interest to other roles.



Figure 7 Repositories viewed through Roles

For example in figure 7 the *Intake Coordinator* can see *Intake form* through the role *Registered Nurse*. Here, Registered Nurse is providing a data source to the Intake Coordinator. In practice, this concept is best implemented through the use of Facades, which makes it possible to manage access to data sources.

Reference Categories

Two significant problems in Information Modeling are initial creation and maintenance of the model. The reference category is a useful invention to help with this problem. Typically a group of roles within an organization contribute to accomplishing a particular objective. For example the Intake Coordinator opens a case and assigns it to a registered nurse that will then make an assessment and creates the care program. During the period that the case is open various professionals will access and input information related to it.

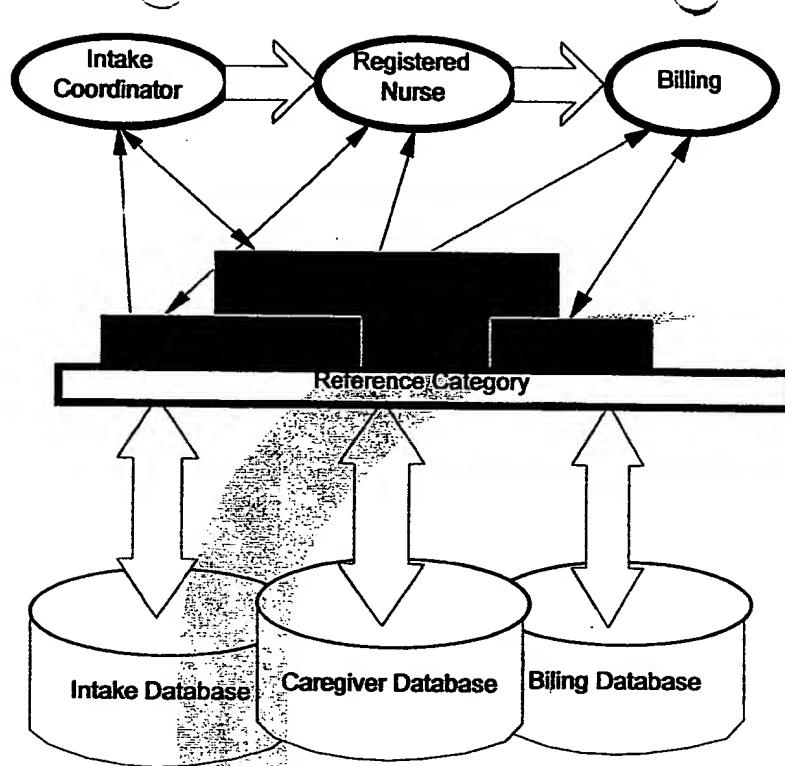


Figure 8 Reference Category

The Information Model is based on information that is used or created by each role within the organization. The Reference Category provides a mechanism to aggregate the information that is used by a group of professionals in the course of completing an assignment under a single category. This mechanism allows a particular data repository to be redefined without effecting the rest of the Information Model.

Facades

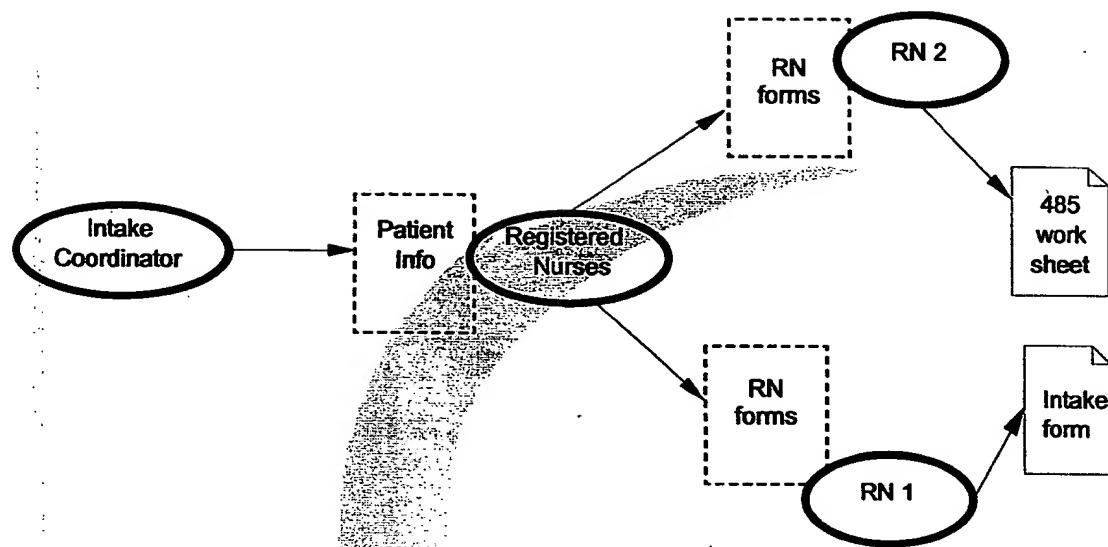


Figure 9 Facades

In figure 9 The category "patient info" is a facade, that represents information content of forms used by Registered Nurses, from the point of view of the Intake Coordinator. The category "RN forms" is the information content of forms 485 worksheet or Intake forms that are common to all registered nurses.

Using Facades makes it possible for RN1 role to begin using 485 worksheet without affecting other roles in the Information Model:

Messages

This section will be completed in later revisions

Actions

This section will be completed in later revisions

Illustrative Embodiments

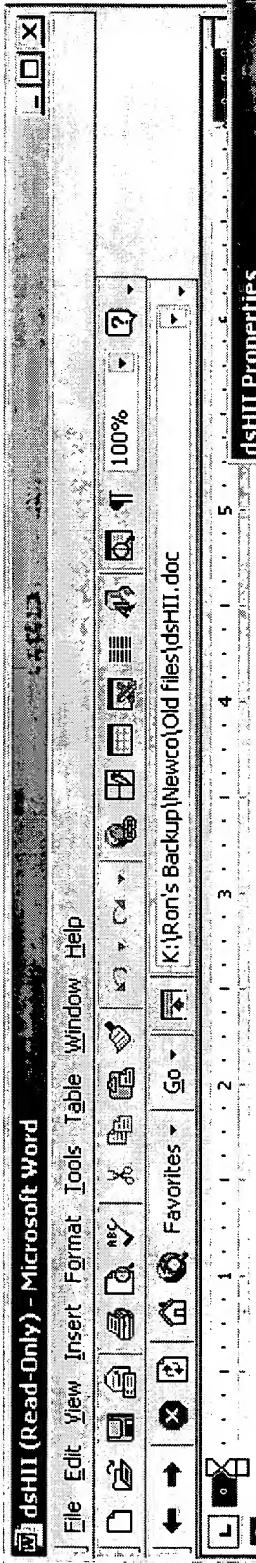
This section will be completed in later revisions

Extensions to Basic Subject Matter

This section will be completed in later revisions

References

This section will be completed in later revisions



Notes on dsHII

These notes are on the next generation Harmonizer based on the idea that Ron Barber 1999. They cover broad ranges of issues on the premise that we now shift gears and I have been working on this and now I think we should treat this completely confidentially. In this document I am trying to explore the total impact of going after a second chance and basically we are back to where we were last year about this time prepared for our meeting on Monday October 11, 1999.

The concept

Once Ron and I kicked the concept around, it seems to have settled down into the following details to be worked out but for the planning purposes I think this is pretty good to

The statement of market need

"I want to be able to get to my data from wherever I am"

After we kicked this around a bit we decided that for now we will accept that "wherever" a. Web browser and "my data" means the information that I use and the context that I virtual office.

A proposed solution

- The user may be a member of multiple enterprises
- Each enterprise defines their *InformationModel* in much the same way as *Business rules plus workflow*. We offer the portal *MyOffice* and the tools web make it easy for the enterprise to define the *InformationModel*.
- The Harmonizer is attached to the user's Web site. This means that its datasources include URL's that resolve into the user's web location and it also means that it operates on the server(s) that house the web pages.
- The Harmonizer accepts trigger events from data sources and other Harmonizers (much the same as we have been thinking).

dsHII Properties

General | Summary | Statistics | Contents | Custom

Created: Monday, October 11, 1999 9:44:00 AM
Modified: Monday, October 11, 1999 8:45:00 AM
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Last saved by: Ronald M. Barber

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Total editing time: 0 Minutes

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	Pages:	2
	Paragraphs:	33
	Lines:	72
	Words:	1027
	Characters:	4478
	Characters (with spaces):	5508

Cancel

OK



Notes on dsHII.

These notes are on the next generation Harmonizer based on the idea that Ron Barber presented on October 8, 1999. They cover broad ranges of issues on the premise that we now shift gears and go after a broader market. I have been working on this and now I think we should treat this completely confidentially until we are ready to go public with it. In this document I am trying to explore the total impact of going after this idea. I am treating this as a second chance and basically we are back to where we were last year about this time. This document is prepared for our meeting on Monday October 11, 1999.

The concept

Once Ron and I kicked the concept around, it seems to have settled down into the following framework. There are details to be worked out but for the planning purposes I think this is pretty good to start.

The statement of market need

"I want to be able to get to my data from wherever I am"

After we kicked this around a bit we decided that for now we will accept that "wherever" means there is access to a Web browser and "my data" means the information that I use and the context that I use it in i.e. a kind of a virtual office.

A proposed solution

- The user may be a member of multiple enterprises
- Each enterprise defines their *InformationModel™* in much the same way as we have been thinking. (Business rules plus workflow). We offer the portal *MYoffice™* and the tools that we provide over the web make it easy for the enterprise to define the *InformationModel™*.
- The Harmonizer is attached to the user's Web site. This means that its datasources include URL's that resolve into the user's web location and it also means that it operates on the server(s) that house the web pages.
- The Harmonizer accepts trigger events from data sources and other Harmonizers (much the same as we have been thinking).
- When the users attach to their Web sites, they are interacting with the pages.

Implications

[REDACTED] The domain of the problem is WWW [REDACTED]

- The need to get the patent nailed is absolutely critical. This is a hot idea and people will steal it. We talk to NO ONE without an NDA.

[REDACTED] We need a product architect who is Web savvy [REDACTED]

[REDACTED] we will need someone who has developed Web applications. Speed is critical and knowing who to use is key. [REDACTED]

[REDACTED] We need a marketing person who had experience in selling web solutions [REDACTED]

- Since we are in web services business [REDACTED]

Current state

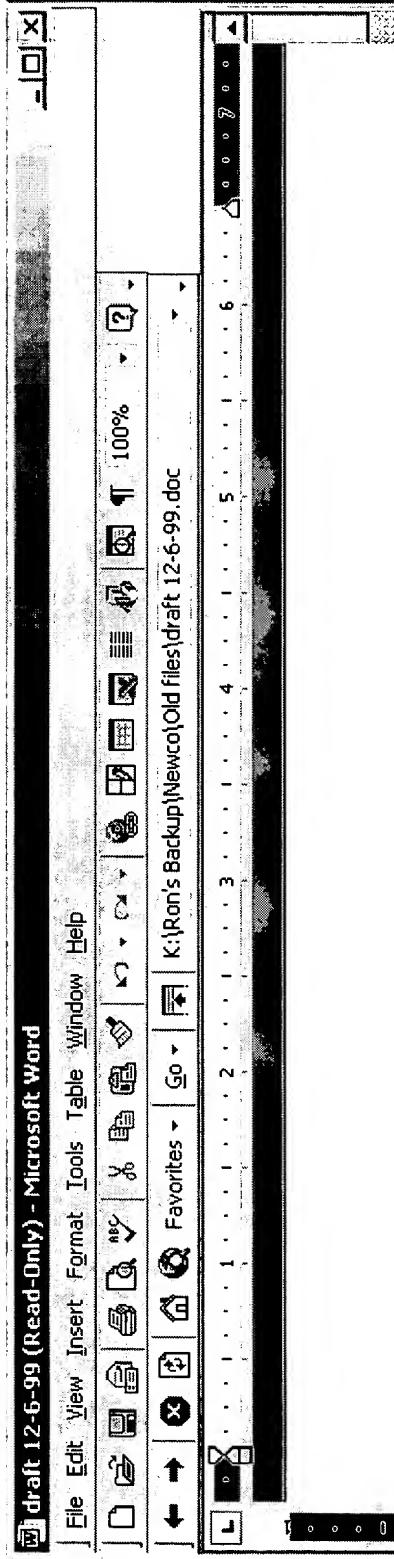
[REDACTED] we should be doing all of the things that this new idea provides, namely:

- [REDACTED]
- Make the Harmonizer into something that is Web based
- Make the product sexy
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

Approach

- Write up the idea and file for the broadest patent possible [REDACTED]
- Write a pro-forma business plan [REDACTED] The money is for patent lawyer, [REDACTED] for product demonstration on the web [REDACTED] to offer the service to general public.
- [REDACTED]

surround ourselves with people who are making their living designing web pages or using the web.



BUSINESS SUMMARY BRIEF

The Vision

To become the leading supplier of information access and management services and Internet appliances. By serving as a host for personal web portals Service Provider (ASP) to this emerging market, Corybant will use its unique tools and services to provide a value proposition to both individual professionals.

The Opportunity

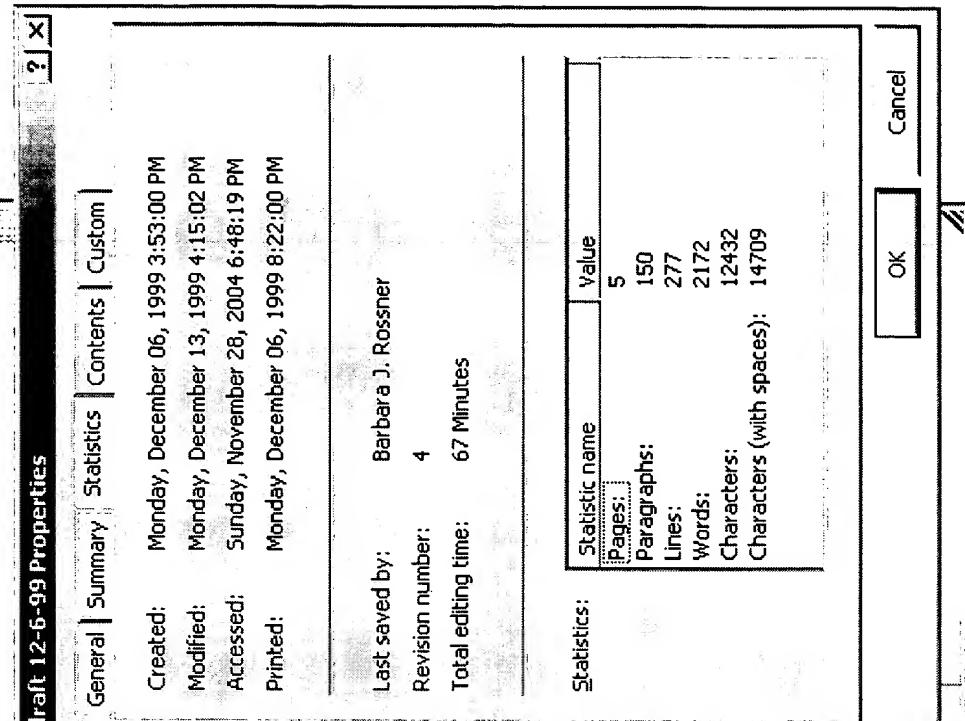
At any given moment during an average day in the year 2003, it is estimated that individuals will be accessing information for personal or professional use via a PC. Instead, they will be using mobile phones, Palm devices, two-way pagers, sensitive screens attached to their home telephones and in their automobiles.

The key to this change in practice is the proliferation of 'Smart'ware enhancement devices which offer e-mail services and web access without the cost and inconvenience of such awkward computer concepts as "desktop applications", "files" and "Operating Systems".

The ultimate success of these devices will be due in part, to the introduction of information management portals that will seamlessly link the various sources shared between these devices. Corybant's web based data source HARMONIZI, enabling technology for a secure personal information management portal.

The Strategy

Corybant's strategy to dominate this evolving market segment is two pronged.



BUSINESS SUMMARY BRIEF

The Vision

To become the leading supplier of information access and management services to users of wireless devices and Internet appliances. By serving as a host for personal web portals and as an Application Service Provider (ASP) to this emerging market, Corybant will use it's unique workflow management tools and services to provide a value proposition to both individual professionals and enterprises.

The Opportunity

At any given moment during an average day in the year , it is estimated that over a hundred million individuals will be accessing information for personal or professional use via the Internet, without using a PC. Instead, they will be using mobile phones, Palm devices, two-way pagers, Interactive TV, and touch sensitive screens attached to their home telephones and in their automobiles.

The key to this change in practice is the proliferation of 'Smart' ware enhanced personal communication devices which offer e-mail services and web access without the cost and inconveniences associated with such awkward computer concepts as "desktop applications", "files" and "Operating Systems".

The ultimate success of these devices will be due in part, to the introduction of secure personal information management portals that will seamlessly link the various sources and types of information shared between these devices. Corybant's web based datasourceHARMONIZER™ (dsH™) is the enabling technology for a secure personal information management portal.

The Strategy

Corybant's strategy to dominate this evolving market segment is two pronged. Initial market penetration will be achieved by providing individual users a web based "personal portal" and "virtual desktop", with options to additional personal services. As an application service provider (ASP), continued market expansion is achieved through subscriber utilization of a rapidly increasing number of web based applications. These market-specific applications will be cataloged and available to professionals and enterprises throughout a wide range of vertical markets.

The Products

Initially, Corybant will offer a basic set of individualized services in the form of a secure (browser accessible) "virtual desktop" for mobile data users of wireless devices and Internet appliances. Using our unique proprietary dsH™ technology, each user can individually configure these basic services to synchronize information between all of their wired and wireless devices to get the information HOW, WHEN and WHERE they WANT it.

"Personal Portal" Basic Features:

- User configurable (*using Corybant's dsH™ technology)
- Secure web portal with "virtual desktop"
- E-mail, V-mail and Fax with Messaging filters
- Calendar and Contact manager
- Automatic Bill-paying
- Virtual disk storage and file system with share drives
- Supports multiple wireless data standards (ABCD, LMNOP, XYZ)

Additional personal service enhancements such as news, on-line trading, application hosting, discounted travel and personal shopping will be offered for a nominal subscription fee.



Applications developers with specific domain expertise (i.e.; Banking and Finance, Insurance, Healthcare, Real-estate, Legal etc.) will benefit from developing applications using Corybant's dsHTM tools and services through a subscription fee sharing program. This program will serve to ensure the availability of the largest number of applications offered through Corybant's ASP portal.

Technology

Corybant's dsHTM is a "real-time interactive information agent" that combines a workflow engine with a unique data mapping tool and enables real-time interaction between disparate data sources, databases, devices and web sites. The dsHTM is a personalized, trainable, information collection agent that is active at all times, collecting, formatting and managing the access to information in accordance with the needs of individual users.

With our dsHTM "web portal designer toolkit" anyone can easily design a "personalized information portal" that centralizes all of an individual's information (business and personal)

This personalized web site becomes a central workflow portal, virtual desktop and your personal doorway to the information you need to do your job, retrieve e-mail and manage your personal affairs... HOW, WHEN AND WHERE YOU WANT IT!

With Corybant's technology, any device that can access the Internet becomes your personal workstation, allowing you to view and manage information in a way that is appropriate and specific for that device.

The Market

The effective use and popularity of 'Smart' ware devices will create a need for personal portals and Application Service Providers (ASP's), practically overnight.

Competitive Position

Our research indicates that the dsHTM may be the only user centric technology that is not attached to a specific operating system, database or application. It is the key that opens the Internet doorway to and changes the way you do business by providing a personalized "front-end" information access. The unique user centric capability of the dsHTM allows us to offer a comprehensive, easy to use portal development package. Our development package will contain bundled agreements with communication services, ISP's and storage brokers, and the "web portal designer toolkit", which is the framework for creating a "personalized information portal".

Marketing Plan

Corybant is in the process of conducting research to appropriately segment identifiable target markets for the dsHTM technology, web portal development package and the portal hosting. It is possible these markets will be defined by business domains such as healthcare, real estate, and finance, or perhaps it will be defined by an entirely new category, in the genera of Web designer, internet service provider (ISP) or application service providers (ASP's).



Management Team

Achievements to date

The datasourceHARMONIZER™ is based on a proprietary software development framework
Corybant's management team funded the development of a
proof of concept implementation of this system under Windows operating system.

This proof of concept was validated , when Corybant
implemented the underlying technology in an MS Windows®
environment and created a prototype system for automating the operation of a Home Care agency using
standard desktop applications. This prototype serves as the model of the "personalized information
portal".

Financial Assumptions

Corybant Inc.

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DRAFT

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12/06/1999



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Funding requirements

Corybant Inc.

CONFIDENTIAL
DRAFT

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12/06/1999



-
- Develop the Web site to demonstrate the product concept
 - Website development
 - Hardware & software requirements
 - Determine and secure additional domain names
 - Negotiate with ISPs
 - Negotiate with ASP's
 - Enhance dsH™ for Internet delivery
 - Develop media strategy via Internet
 - Determine minimal requirements for "Internet delivery proof of concept"
 -
- Address the patenting and intellectual property issues.
 - Hire patent attorney
 - Determine patent strategies
 - File for patent
 -



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1 BACKGROUND OF INVENTION

1.1 Field of Invention

This invention relates to processes governing the implementation of a collaborative computing environment within an enterprise and, more specifically, to a core software component (the Invention) which makes it possible to implement this environment.

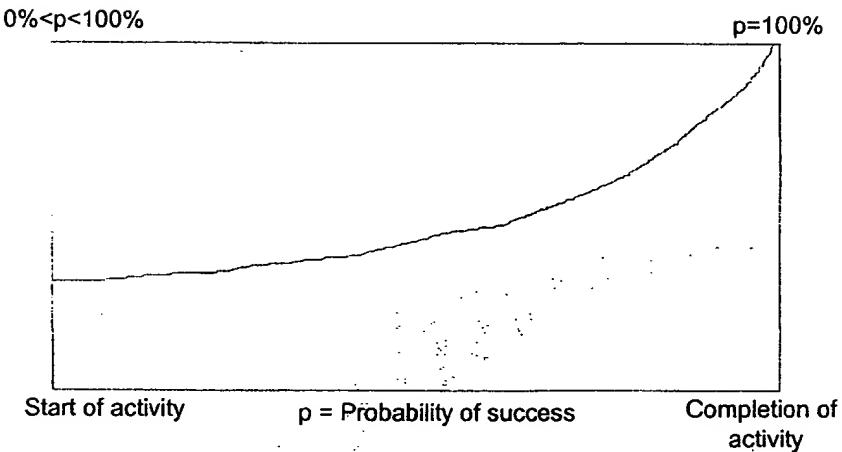
The result of deploying the Invention is a virtual, interactive, information management system that is not uniquely dependent on any server or any specific apparatus for its operation. The implementation of the system can utilize a variety of electronic data processing devices to assist the users' interaction with the system and data storage serves and communication links to provide for storage and transmission of persistent information. Electronic devices as identified above may be workstations, laptop computers, and hand held data entry and communication devices. The choice of these devices is based on the needs of the users of the system and the system itself is not dependent on any apparatus. The information system deploying The Invention primarily embodies the processes that the collective user community has adopted rather than imposing processes that facilitate use of its elements.

Process n

- 1: a particular course of action intended to achieve a results; "the procedure of obtaining a driver's license"; "it was a process of trial and error" [syn: procedure]
- 2: a sustained phenomenon or one marked by gradual changes; "events now in process"; "the process of calcification begins later for boys than for girls"
- 3: the performance of some composite cognitive activity; an operation that affects mental contents; "the process of thinking"; "the act of remembering" [syn: cognitive process, operation, cognitive operation, act]
- 4: a writ issued by authority of law; usually compels the defendant's attendance in a civil suit; failure to appear results in a default judgment against the defendant [syn: summons]
- 5: a mental process that you are not directly aware of; "the process of denial" [syn: unconscious process]
- 6: a natural prolongation or projection from a part of an organism either animal or plant; "a bony process" [syn: outgrowth, appendage] v 1: deal with in a routine way: "I'll handle that one"; "process a loan"; "process the applicants" 2: subject to a process or treatment, often with the aim of readying for some purpose; "process cheese"; "process hair"; "process water" [syn: treat] 3: perform mathematical and logical operations on (data) according to programmed instructions in order to obtain the required information; "The results of the elections were still being processed when he gave his acceptance speech" 4: institute legal proceedings against; file a suit against; "He was warned that the district attorney would process him" [syn: sue, litigate] 5: shape, form, or improve something: "work stone into tools"; "process iron" [syn: work, work on] 6: serve somebody with a warrant or summons; "He was processed by the sheriff" [syn: serve, swear out]
- 7: march in a procession; "They processed into the dining room" [syn: march]

Webster Online Dictionary

The concept of "process" as used in the context of The Invention implies a continuous focus on achieving the intended results. Specifically, and for the purposes of information management, a process is the formal element of managing the probability of success during the course of an activity.



For any activity that is undertaken by an organization or individual there is some chance of failure i.e. probability of success for that activity is less than 100%. Once the activity is completed and the expected results are achieved the probability of success is 100%. A process is the thoughtful and formal method that is adopted by the individual or organization for the purpose of systematically improving the probability of success from its starting value to the success outcome.

The active elements of any process in an organization are the individuals who participate in the process. Within the framework of the governing process these individuals are tasked with redefining and executing the specific actions that result in improving the probability of success. An information system that serves such a process must facilitate this redefinition and execution of these specific tasks. It follows that a critical attribute of The Invention is its ability to model an existing process into a coherent, active information base whose behavior is continually updated and reconfigured by its users.

1.2 Statement of the problem

To Harmonize: To adjust in fit proportions; to cause to agree; to show the agreement of; to reconcile the apparent contradiction of
(From Webster's Revised Unabridged Dictionary 1913)

We will use the process of building an information system for HomeCare, a home care agency, as an example in describing the problem that is addressed by The Invention. The mission of HomeCare is: "to provide a comprehensive range of home care services to the community and strive for the highest level of professional and technical competence in those services".

Figure 1 provides an organizational view of an information system for HomeCare. Activities in this organization are substantially influenced by two external sources: the Doctors and the Payers. Additionally, regulatory considerations impose requirements from the perspective of quality and longevity of the patient records. Furthermore, professional and business considerations impose requirements with regard to timeliness of services and preparation of information relative to the services. Caregivers deliver the actual services that HomeCare offers according to methods and policies that are accepted by the Caregiver community in general and that are modified to fit the specific needs of the professionals who are employed by HomeCare.

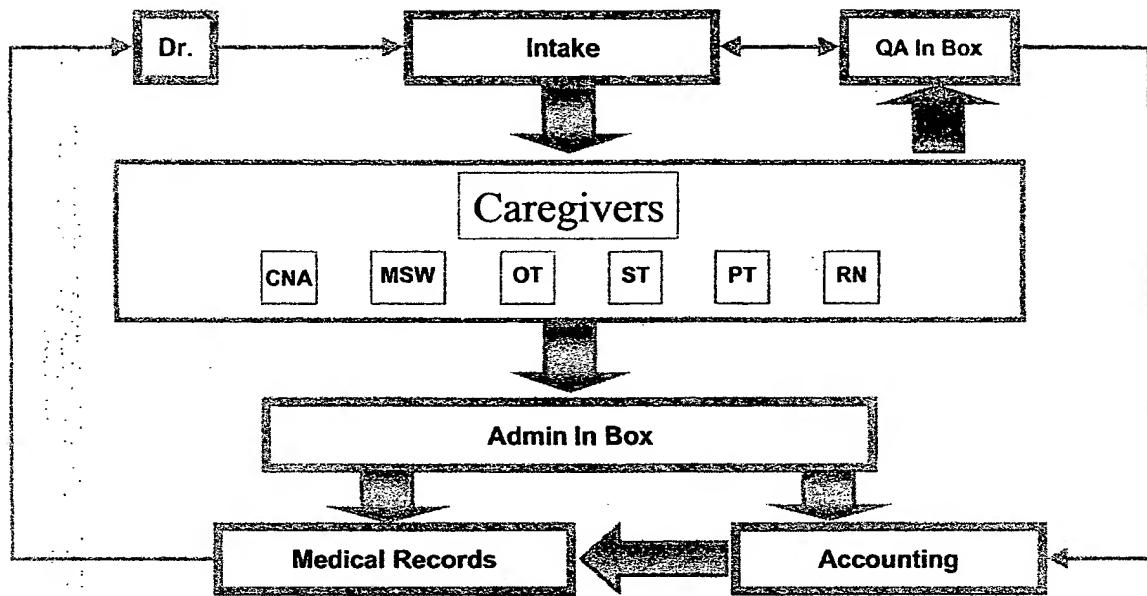


Figure 1. Organizational view of an Information system for a home care agency

Within this organization, policies regarding formal flow of information are based on:

- Agreements among individuals and groups,
- Job assignments,
- Government regulations,
- Policies of payers and Doctors or client hospitals.

It is important to recognize that these policies are NOT based on implementation considerations of the electronic data processing and communication equipment.

1.2.1 Moving toward automation

However, the management understands that the practice of information management represents a significant portion of the organization's responsibilities. The common wisdom that is substantiated by practice in other industries indicates that proper use of state of the art technology in information management can improve quality and reduce operating cost. The management has identified a key focus area for process improvement to be automation and has specified a goal to: *"develop a strategic plan and budget to support the automation of core business processes including tactical planning for interim computer operations, and the evaluation of appropriate available computer technology in moving toward an electronic patient record and total electronic bill generation"*.

However, the definition of "appropriate available computer technology" is not a constant. On the average, using the technology life cycles of 1995-1999 as a basis of calculation, the life span of an automation tool is about $\frac{1}{2}$ to $\frac{1}{3}$ the time that it takes a regulated organization to make a measurable change in its operating processes. Given the above statement of objectives and the organization's current state of operational reality, it seems inevitable that the organization will move toward higher degrees of automation in phases. A traditional decision process to prioritize the goals of each phase of automation follows the decision support model that is shown in Figure 2.

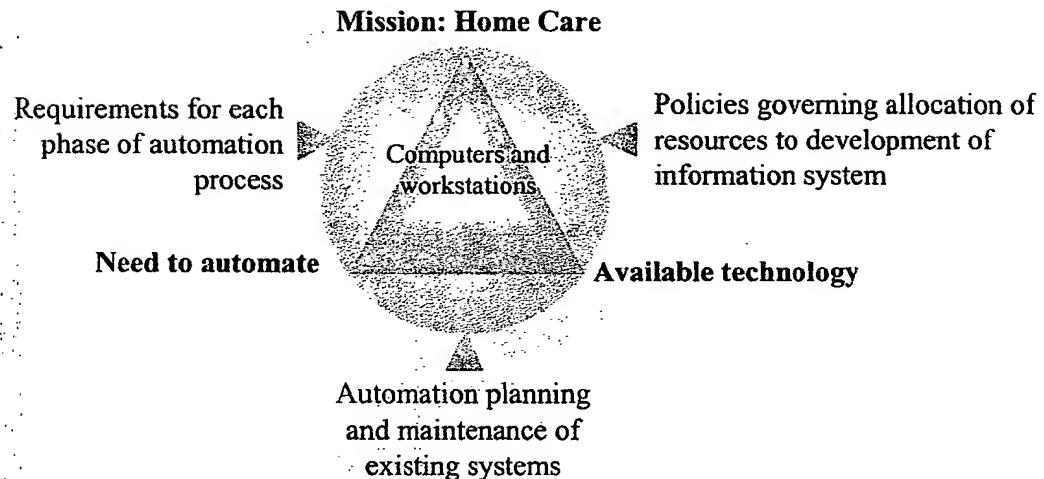


Figure 2. Decision support model based on state of technology

This model identifies the elements of the decision process and highlights the relationships between these elements. It demonstrates the following principals:

1. The overall objective is to improve the effectiveness of the organization toward performance of its mission (home care).
2. Requirements for each phase of automation are driven by the need to automate some portion of the business.
3. The specific goals of each phase of automation will be determined by the individuals or groups who are impacted and the state of tools and services that are affordable to the organization.
4. The allocation of resources to each phase of automation will be driven by the realities of the business and the available technologies.

This is a commonly used model and somewhat intuitive from the perspective of supplying services and technology to this organization. However this model is biased toward technological considerations at the expense of organization's need to plan and execute its long-term goals. From this respect, decisions based on this model tend to create conflict between the users and service providers. A frequent outcome of using this model in support of automation decisions is to limit the practices of various pieces of the organization to the capabilities of the last component of automation that was installed. Given the rate of change of technology, the fact that it may take the organization 6-12 months to adopt an automation component, and the nature of HomeCare's business that forces it to use products after they have been proven, the organization is always guaranteed to be using obsolete products. Phased implementation further exasperates the situation, making it practically impossible for HomeCare to effectively deploy technology.

An alternate model that is to a great degree impervious to technology changes is demonstrated in Figure 3. Given such a model, the decision process for each phase of automation can be a continuation of the overall process of business automation and can benefit from the lessons learned from previous phases. Technology considerations, which are by nature variable, are still included in the process of implementing the infrastructure but they do not govern the process of automation.

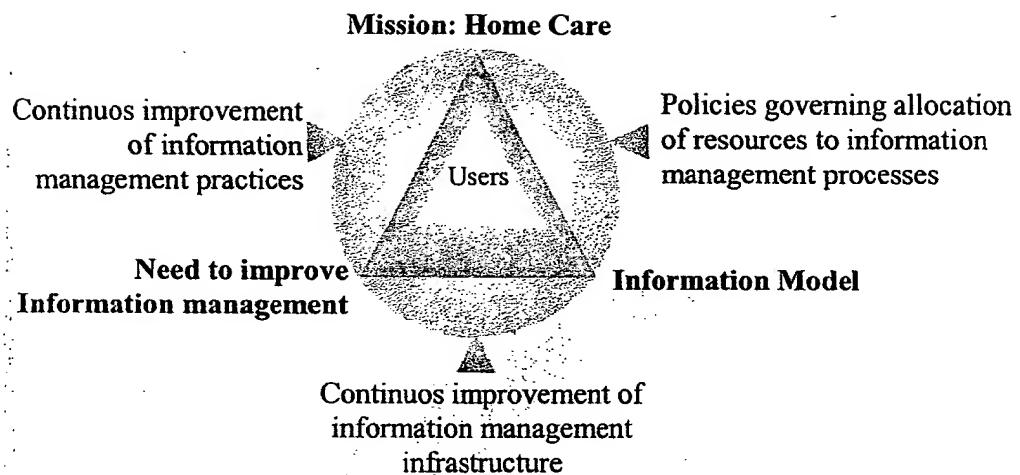


Figure 3. Decision support model based on business considerations

In the case where the organization makes its decisions on the basis of the Information Model rather than technology, the key considerations are changed to satisfy the need for continuous improvement and at the same time recognize the limitations of the available technologies:

- The overall objective is to improve the effectiveness of the organization toward performance of its mission (home care).
- Requirements for each phase of automation are driven by the organization's overall need to improve the ability to manage its information base.
- The specific goals of each phase of automation will be determined by balancing the need to improve information management practices and affordability of the underlying technology.
- The allocation of resources to each phase of automation will be driven by the realities of the business and the long-term strategy to move toward automation.

Traditional implementations of information systems fail to accommodate this need because they are based on a view of one or more information-processing engine (computers and workstations) as the central component of the information management system. The invention that is being described in these notes makes it possible to put the needs of the users of the information system in the center of the decision support process.

2 SUMMARY OF THE INVENTION

The primary function of the invention is creation and continuous improvement of an information system by the organization that deploys a computer system. The behavior of such a computer system is based on the requirements of the practices that have brought about the need for the information system. This function is made possible through implementing an Information Model that:

- Identifies the individual roles within the organization
- Identifies location and characteristics of sources and destination of the information elements that are used or created by each role (the relationship of each role to the data)
- Specifies the rules of translation between elements of data, from the perspective of each individual role.
- Specifies actions that are taken by each role relative to the information (the relationship of roles to one another).

The core components of the invention that support these features are:

1. A persistent record that describes above information for each role: **Configuration**
2. A software program that uses this information to perform the specified actions for each role: **Engine**
3. A formalism that provides for translating the needs of the organization into configuration records for each instance of the Engine: **Process**.

3 BRIEF DESCRIPTION OF THE DRAWING

This section will be completed in later revisions

4 DETAILED DESCRIPTION

4.1 Information Model

To be of value in the decision process, an information system must be easy to implement and adaptable to emerging technologies and changing business needs. Its successful implementation incorporates knowledge of the roles of the individuals and workflow within the enterprise. Additionally, it is necessary to implement such an information system incrementally, allowing for the fact that at all times different parts of the enterprise will be at different levels of operational and technological maturity.

The four basic elements of the invention reflect these concepts in such a way as to facilitate a formal process for creation and maintenance of an Information Model. These elements are Roles, Data Sources, Relations, and Workflow.

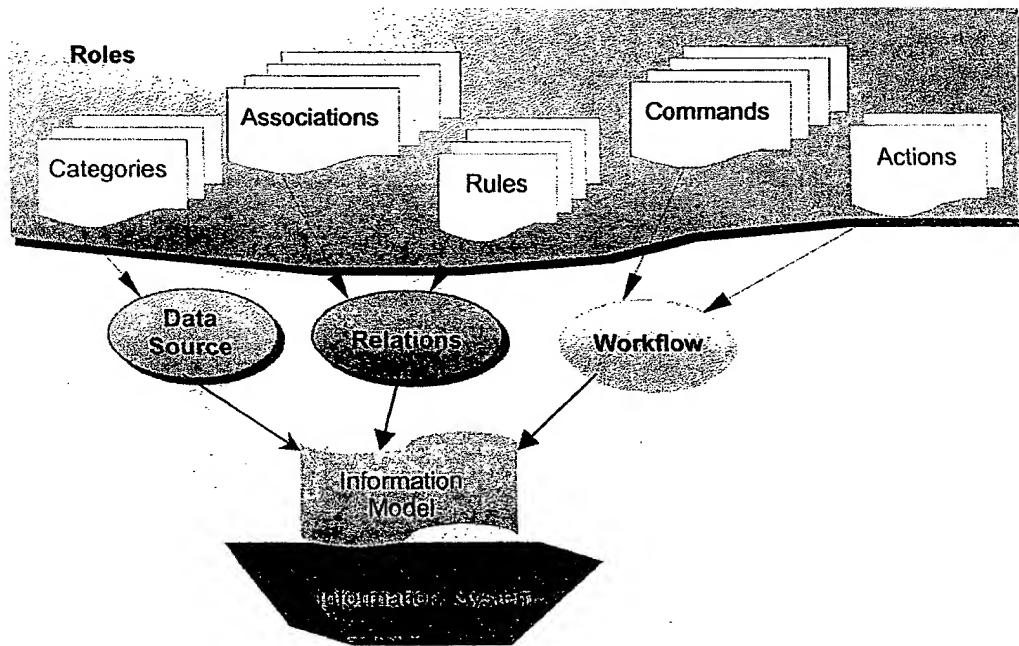


Figure 4 Basic dsHTM Concepts

The invention provides for definition and utilization of these elements, to the extent that is necessary to create and maintain an Information Model. The focus of the invention is on accuracy of this model and two key qualities of the resulting information system i.e. serviceability and potential for change. Other key qualities of the information system (performance, security, and availability) will reflect the behavior of the implementation platforms.

4.1.1 Roles

The invention provides a mechanism to define a role by specifying the activities that an individual in the organization will require of the information system, in the course of fulfilling an assignment. For example the following statement is a part of the definition of a role:

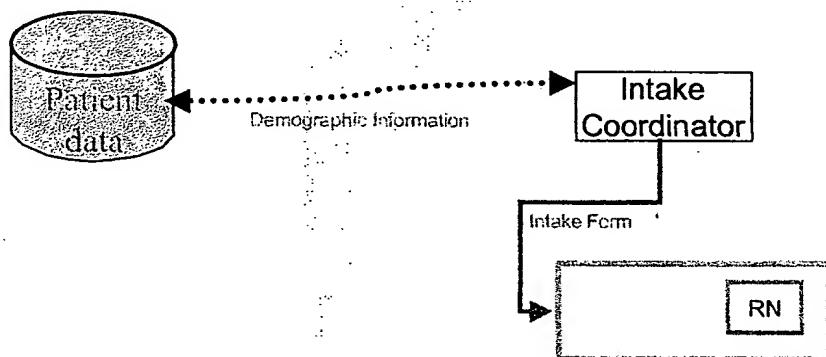


Figure 5 Defining the Intake Coordinator Role

"To open a case the Intake Coordinator copies the patient demographic information from patient database into the Intake Form and sends this form to the RN." This statement identifies the following elements of the Information Model:

Data sources	Patient Database and Intake Form
Reference model	the collection of the data fields that describe Patient Demographic information and their relationship to the fields in the Intake Form
Commands	select information defined by patient demographic and insert this information into the appropriate fields in intake form
Action	Open a Case.

Table 1 Elements of the Intake Coordinator Role

By defining a role in this way, the external points (to the Information system) where information is created or used are identified. In abstract a role may be described as "external interfaces of the information system". Figure 5 shows a practical view of a role, as a particular aggregation of the internal elements of the information system.

4.1.2 Data sources

Data source is an abstract concept that encapsulates the sources and destinations of the information. We have used the generic term data source, in recognition of Microsoft's ODBC and OLEDB initiatives, which are significant contributors to the computer industry's ability to share information between disparate systems. Our use of this term, however, is broader than Microsoft's. We look at data sources as elements of the entire enterprise rather than a component of the computing environment within the enterprise.

A data source, as a fundamental element of an Information Model refers to any component of the overall organization where information is stored and is made available according to a well-defined set of rules.

Practically, for the purposes of the invention, a data source is defined as any data storage mechanism within the information system for which a formal interface definition is available. This includes databases and application specific file formats and other Engines.

4.1.2.1 Categories

A data source is identified within a role as a category. A category within a role identifies the data sources that are used how to get to them and the way the information within a category is to be treated. For example a category may be a real database located at a particular location on a network, a reference schema that describes the way data should be organized, a facade: a view of data into another data source or a report that should be printed or mailed

4.1.3 Relations

Relations are attributes of an Information Model that are concerned exclusively with the relationship between the elements of data sources. Relations include associations and rules.

4.1.3.1 Associations

An association is a relationship between fields of data sources. For example element "name" in data source A is the same as element "Patient Name" in data source B. It is important to realize that an association is not a movement of data. From that perspective there is no implication of order within the concept of association.

4.1.3.2 Rules

This section will be completed in later revisions

4.1.4 Workflow

The Workflow Management Coalition (WFMC) defines workflow as: "The computerized facilitation or automation of a business process, in whole or part". Corybant uses the phrase workflow to refer to the attributes of an Information Model that are concerned with movement of information between different data sources.

4.1.4.1 Commands

This section will be completed in later revisions

4.1.4.2 Actions

This section will be completed in later revisions

5 THE ENGINE

The Engine is an Active component that moves information between various data sources within a network. A "data source" can be any collection of data for which a provider can be created (such as a tab separated files, spreadsheets, or fields in a form, or a table in a relational database). An Engine can see data sources through other Engines and can send and receive events.

The Engine may be used as a single utility that simplifies access to various data sources for a single user or device. An example of this kind of application may be a report that is created in a document that uses information from various databases, PACS systems and Hospital Information Management systems. Another example may be a protocol converter for a device within a health information management system. The Engine may also be used as a member of a collection of Engines and facilitate workflow as well as information access. An example of such an application is a Long-Term Care environment where various healthcare professionals communicate with each other through sending and receiving pre-specified forms. Each Engine uses a configuration model file that specifies its associated datasources, trigger events, and mapping rules.

Using the Engine a user of a networked workstation can input, export and review information from different databases or documents. The user interface may be desktop applications, Word processors, spreadsheet programs and personal information management applications (such as e-mail or contact managers) as well as many commercially available special purpose applications.

5.1 Details

This section will be completed in later revisions

6 INFORMATION MODELING

Information Modeling is the process of maintaining a formal description of how information within an enterprise is created, who creates it, and in what forms it is used. Ultimately an Information Model is a tool that will help with the process of continuously improving the operation of the organization. As a tool of process improvement, the Invention offers four key concepts that are somewhat independent and at the same time collectively provide a complete definition. These key concepts are identified in this section:

- Roles: The complete definition of the creators and users of information
- Categories: Data sources, schema presentation formats of data containers.
- Messages: Information transport media
- Actions: Events that govern transmission of messages between roles

These concepts are “abstractions” in the sense that each of them is a convenient aggregation of ideas and practices that satisfy the needs of a particular view within the enterprise.

6.1 Roles

The most basic concept in the Invention is the concept of a Role. A Role is a description of a collection of assignments, usually associated with an individual or group with a specific set of credentials. Table 2 is an overview of the relationship between a role and the flow of information.

Abstraction	Described in terms of...
Role	Qualifications of the individuals e.g. Registered Nurse, Certified Records Administrator
Assignments	Objectives described qualitatively e.g. Admit a patient, Maintain patient records.
Tasks	Measurable goals e.g. complete intake form, perform initial case assessment.

Table 2

To satisfy the needs of creating and maintaining an Information Model, identification of a given role is sufficient. In fact deeper abstractions will create an obstacle to exploring alternative approaches within the overall objective of continuous improvement. This is in contrast, for example, to the process of application development where it is necessary to categorize the tools that are needed in performing each task.

The fact that the end users of the Invention product are practitioners within a regulated industry makes the concept of a "Role" a key concept in Information Modeling. Within this industry, the qualification of an individual practitioner, more than the business considerations, determines the assignments that they can accept and the information that they need in order to meet the objectives of those assignments.

6.2 Categories

Within the organization, however, different roles can collaborate because they share *perspectives* on information. A *perspective* is an agreement on how to view information. A category is an abstraction that identifies a "view" of the information that may be useful to a group of perspectives.

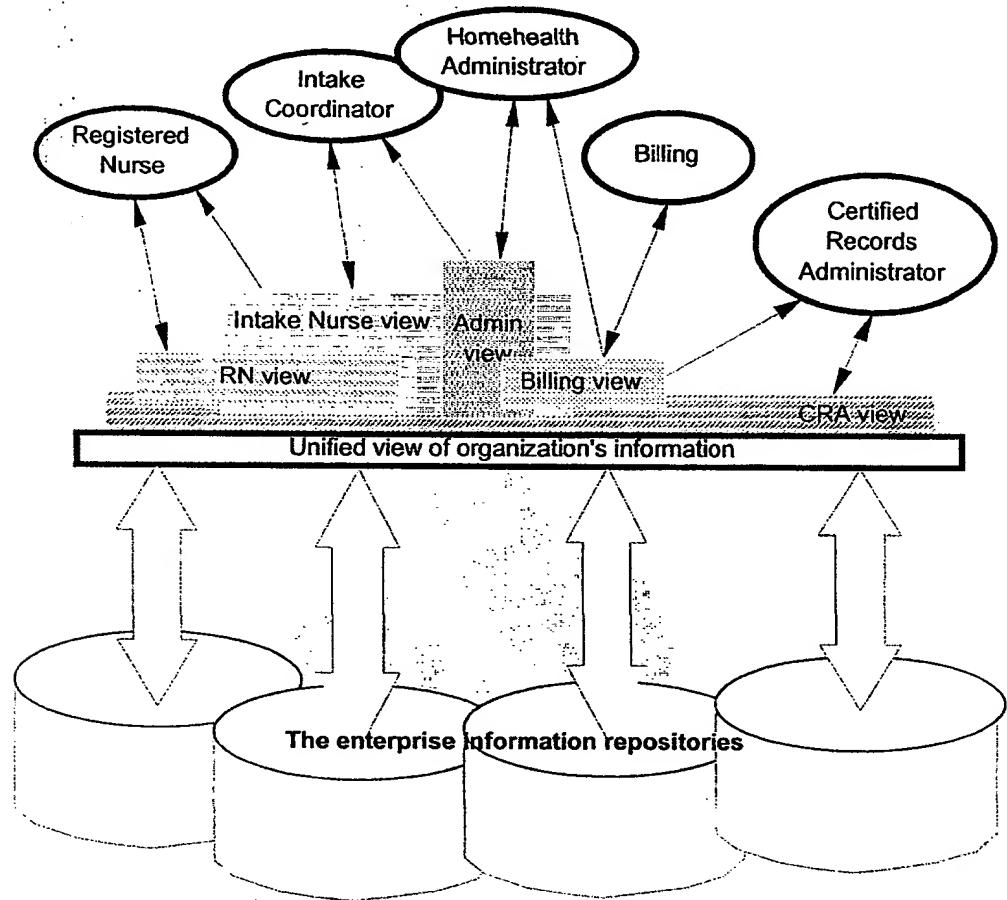


Figure 6 Perspectives and Views of Information

Using this framework, the following concepts are of interest in defining categories.

- Data repositories
- Data repositories as viewed through roles
- Reference categories

- Facades

► The first two concepts are concerned with the sources of information whereas the last two deal with creation and maintenance of the Information Model itself. A good general rule is that design of an Information Model is that reference categories are inventions that facilitate dealing with data repositories and facades are inventions that facilitate dealing with roles.

6.2.1 Data repositories

For the purposes of Information Modeling any persistent medium that may contain information is a data repository. For practical purposes the information flow in and out of a given data repository is subject to its specific characteristic. For example in the context of an automated document management system, a hand written document that will be stored as a part of patient's medical record is a valid data repository with a somewhat complex interface rules. For the purposes of Information Models related to the use of the Invention, machine accessible data repositories are the primary consideration.

6.2.2 Repositories viewed through roles

For all purposes, roles appear as sources of information to other roles. In practice, however, it is the view of information from within a role that is of interest to other roles.

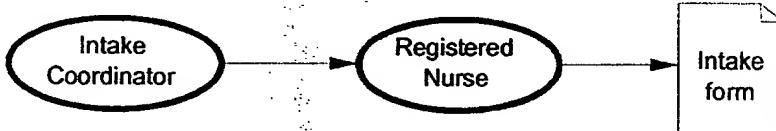


Figure 7 Repositories viewed through Roles

For example in figure 7 the *Intake Coordinator* can see *Intake form* through the role *Registered Nurse*. Here, Registered Nurse is providing a data source to the Intake Coordinator. In practice, this concept is best implemented through the use of Facades, which makes it possible to manage access to data sources.

6.2.3 Reference Categories

Two significant problems in Information Modeling are initial creation and maintenance of the model. The reference category is a useful invention to help with this problem. Typically a group of roles within an organization contribute to accomplishing a particular objective. For example the Intake Coordinator opens a case and assigns it to a registered nurse that will then make an assessment and creates the care program. During the period that the case is open various professionals will access and input information related to it.

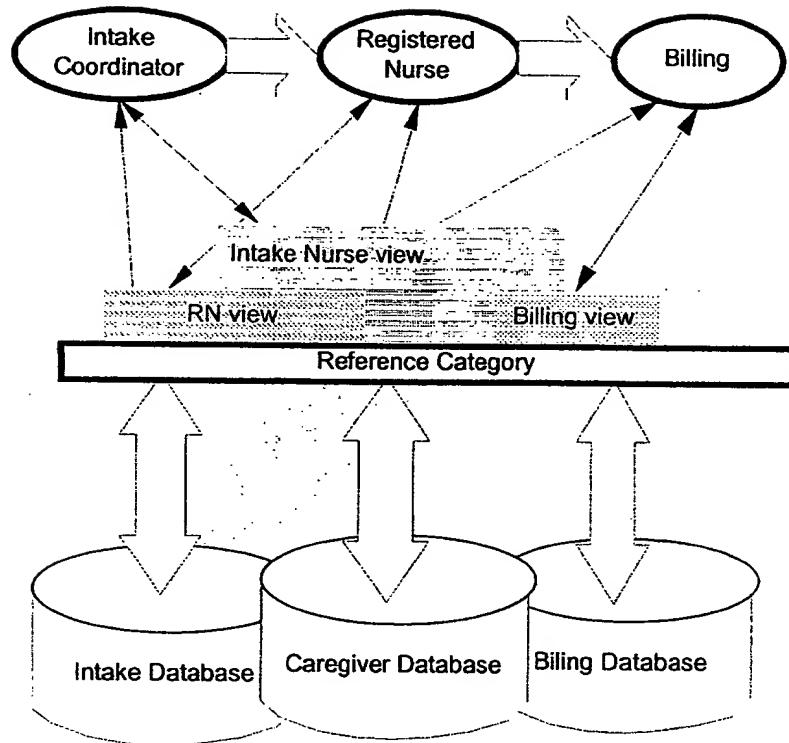


Figure 8 Reference Category

The Information Model is based on information that is used or created by each role within the organization. The Reference Category provides a mechanism to aggregate the information that is used by a group of professionals in the course of completing an assignment under a single category. This mechanism allows a particular data repository to be redefined without effecting the rest of the Information Model.

6.2.4 Facades

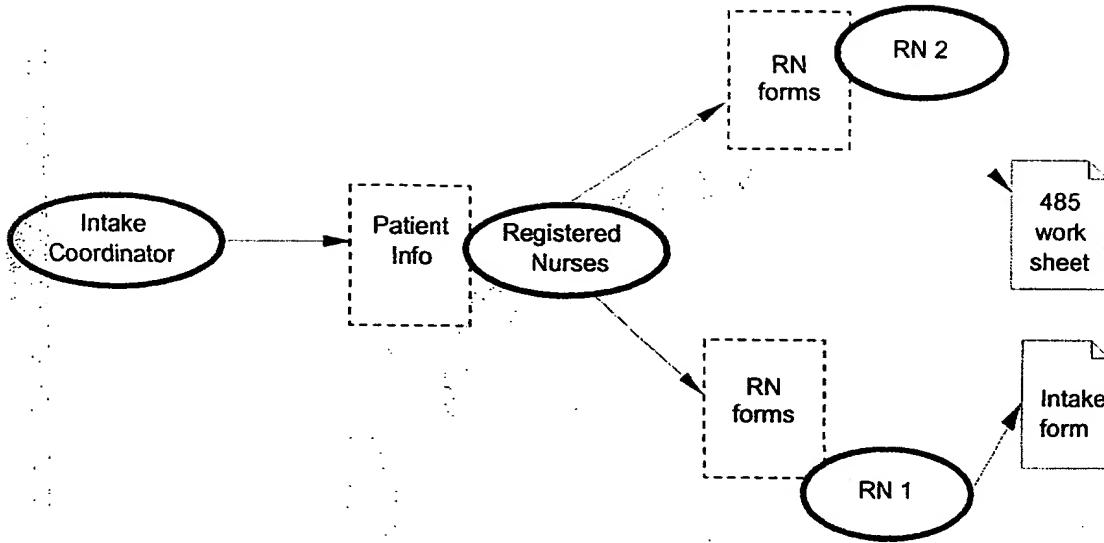


Figure 9 Facades

In figure 9 The category "patient info" is a façade, that represents information content of forms used by Registered Nurses, from the point of view of the Intake Coordinator. The category "RN forms" is the information content of forms 485 worksheet or Intake forms that are common to all registered nurses.

Using Facades makes it possible for RN1 role to begin using 485 worksheet without affecting other roles in the Information Model.

6.3 Messages

This section will be completed in later revisions

6.4 Actions

This section will be completed in later revisions

6.5 Illustrative Embodiments

This section will be completed in later revisions

6.6 Extensions to Basic Subject Matter

This section will be completed in later revisions

6.7 References

This section will be completed in later revisions



Network Tools

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Who is 'mypip.net'?

[whois.networksolutions.com]

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FastDns Network
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lisle, IL 60532

US
630-357-8545 fax: - 630-357-8545

Record expires on 11-Dec-2004.
Record created on 11-Dec-1999.
Database last updated on 22-Nov-2004 16:07:46 EST.

Domain servers in listed order:

NS1.MMAWEB.NET	216.218.226.130
NS2.MMAWEB.NET	216.218.226.131

DSC's selection of network diagnostic and information tools:

ICMP ping to host or IP address:

Send 5 'ICMP' packets and measure the time taken to receive them back

Traceroute to host or IP address:

Show the route used to reach the entered host or address from this server

Whois domain:

Interrogate a 'whois' server to find information about the particular domain

DNS Address records for host:

Show IP addresses for the entered host name

DNS Mail Exchanger records for host:

Show details of mail exchangers for the entered host name (or domain)

DNS Host records for address:

Show the names of hosts associated with the entered IP address

Send a test e-mail to:

Send a short test message to the entered address

The screenshot shows a Microsoft PowerPoint window with a slide titled "myPIP.net". The slide content includes a logo, a title, and two bulleted sections: "Personal Information Portal" and "Personal Portal features". A "Properties" dialog box is open, showing the slide's creation date as December 14, 1999, at 10:45:37 AM, and the last saved by "Mho Salim". The dialog also lists revision number 1, total editing time of 9 minutes, and a statistics table with values for slides, paragraphs, words, bytes, and notes. The "Hidden slides" and "Multimedia slide" rows are empty. The "OK" button is visible in the bottom right corner of the dialog.

myPIP.net - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History

Address http://domreg.affinity.net/mem_customize_preview.phpml

Go

myPIP.net

Personal Information Portal

Personal web portals for mobile data users of wireless devices and Internet appliances, offering a basic set of synchronized individualized services in the form of a secure, browser accessible, "Virtual Desktop".

Personal Portal features

- Secure web portal with "Virtual Desktop"
- Contact manager
- Sharable Virtual disk storage and file systems
- E-mail, V-mail and Fax
- Supports multiple wireless data standards
- Calendar

Available early 2000



A screenshot of Microsoft Word showing a document titled "Corybant Business Summary 6 CYC Properties". The document contains sections for Opportunity, Vision, and Market, with a table of statistics and a "Properties" dialog box. The "Opportunity" section discusses the future of mobile communication. The "Vision" section states that Corybant is positioned to become the leading supplier of web based information access and management. The "Market" section notes the rapid growth of wireless Internet. The "Properties" dialog box shows statistics for the document, including 3 pages, 100 paragraphs, 170 lines, 1301 words, 754 characters, and 8945 characters with spaces. The "OK" button is highlighted.



Business Summary

Opportunity

By 2003, over 100 million individuals will be accessing information for personal or professional use via the Internet, using mobile phones, pagers, Interactive TV, and touch sensitive screens on telephones and in automobiles. The key to this change in practice is the recent introduction of personal communication devices and Internet appliances that offer e-mail services and web access without Personal Computers. The ultimate success of these devices will depend in part, on a solution that personalizes and seamlessly links the various sources and types of information shared between these devices. With its proprietary datasourceHARMONIZER™ (dsH™) technology, Corybant has developed that solution and is positioned to become the leading supplier of web based information access and management services to users of wireless devices and Internet appliances.

Vision

Corybant is positioned to become the leading supplier of information access and management services to users of wireless devices and Internet appliances. Serving as a personal web portal host and Application Service Provider (ASP), Corybant's proprietary tools and services provide a value proposition to both individuals and enterprises.

Market

The rapidly growing use of new wireless Internet access devices and Internet appliances has created a need for personal information management solutions and Application Service Providers (ASPs), overnight.

It is estimated that over 100 million individuals will be accessing the Internet via these devices by 2003.

Current reports indicate the following demographic trends for the wireless Internet marketplace:

- US Mobile Data Workforce: 3.5million subscribers in 1999, 20 million by 2004
- US Wireless Internet and E-mail: 5.6 million in 1998, 48 million by 2004
- US Business Internet and Data: 49 million of the 108 million people employed by 6 million firms in the US currently rely on the Internet daily
- Europe: more than 237 million cellular subscribers in Western Europe by 2003 and Durlacher estimates mobile commerce will grow to €23.6 billion (\$23.8 billion)
- Japan: current market research indicates Japanese wireless companies are signing new subscribers at a rate of 500,000 per month.

Unconstrained by physical connections and Personal Computers, these devices will enable a new breed of mobile data users and service providers in the m-commerce, or mobile commerce market. As an ASP, Corybant will provide information services (including personal portals with Internet storage) and applications

Strategy

Our strategy is to:

1. Introduce our services
"personal information portal"
2. Expand our services
3. Extend product and service offerings

Revenue Model

Products

Using our proprietary dsHTM technology, Corybant will enable and host personal web portals for mobile data users of wireless devices and Internet appliances, offering a basic set of synchronized individualized services in the form of a secure, browser accessible, "Virtual Desktop".

"Personal Portal" Features:

- Secure web portal with "Virtual Desktop"
- Sharable Virtual disk storage and file systems
- Supports multiple wireless data standards
- Contact manager
- E-mail, V-mail and Fax
- Calendar

Technology

Corybant's dsHTM is a "real-time interactive information agent" combining a workflow engine with a unique data mapping tool and enabling real-time interaction between disparate data sources, databases, devices and web sites. The dsHTM is a personalized, trainable, information collection agent that is active at all times, collecting, formatting and managing the access to information in accordance with the needs of individual users. With dsHTM technology, any device that can access the Internet becomes your personal workstation, allowing you to view and manage your information in a way that is appropriate and specific for that device.



Management Team

The business potential and commitment of these individuals to Corybant's success provides an attractive opportunity for qualified professionals who wish to benefit by joining our team.

Financial Assumptions

Funding requirements

- Develop the Web site to demonstrate the product
- Patent the dsH™ technology.

Corybant, Inc.

Corybant Inc.

CONFIDENTIAL

Page 3 of 3
12/13/1999



Corybant, Inc.



SM

"We're MOBALIZING

the INTERNET with ACTIVE

Personal Information Portals

for

Wireless Devices & Internet Appliances"

the Opportunity: Mobile Professionals using the Internet

Over 100 million wireless Internet Users Projected

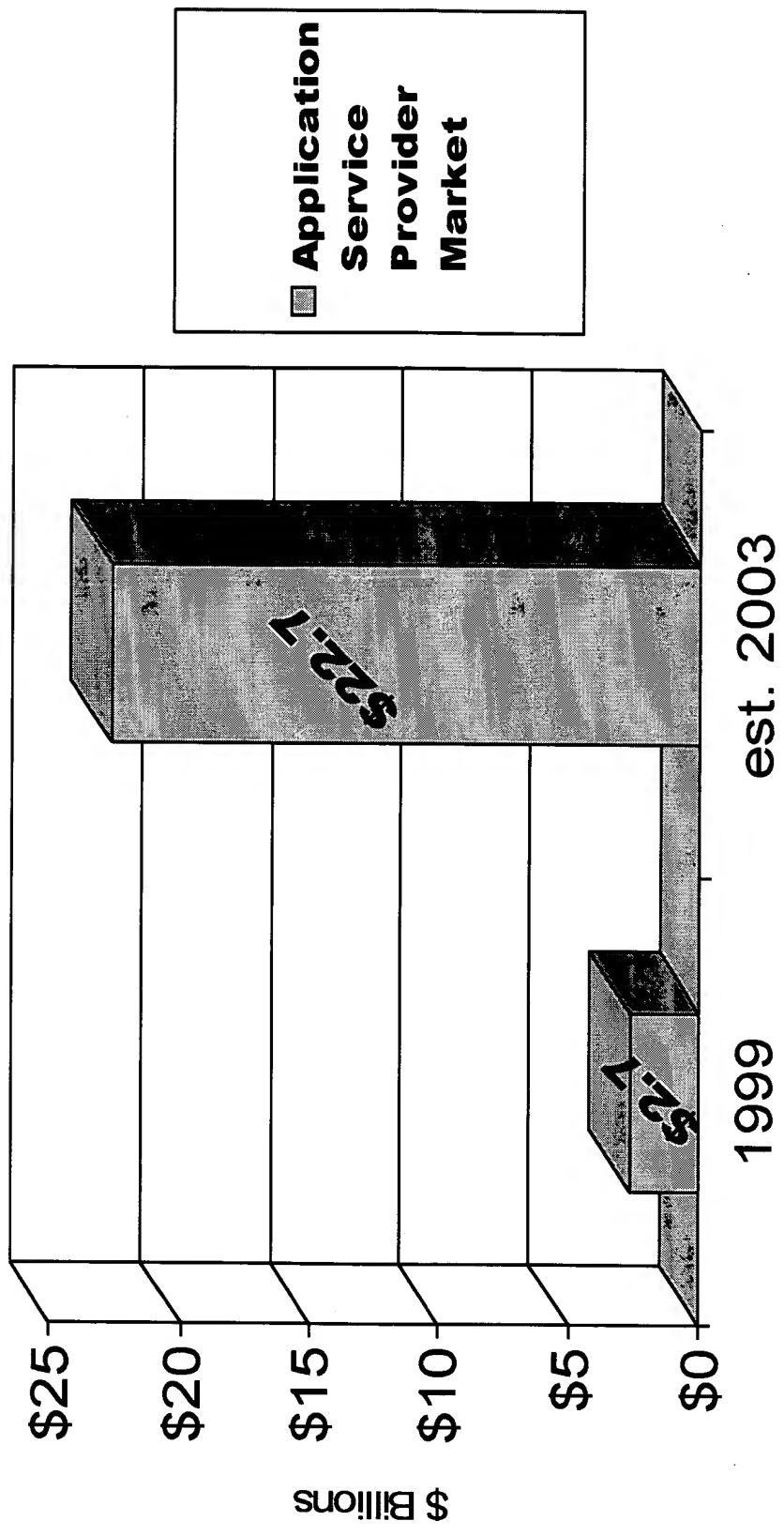
- US Mobile Data Workforce: 3.5million subscribers in 1999, 20 million by 2004
- US Wireless Internet and E-mail: 5.6 million in 1998, 48 million by 2004
- US Business Internet and Data: 49 million of the 108 million people employed by 6 million firms in the US currently rely on the Internet daily
- Europe: more than 237 million cellular subscribers in Western Europe by 2003, Durlacher estimates mobile commerce will grow to €23.6 billion (\$23.8 billion)
- Japan: current market research indicates Japanese wireless companies are signing new subscribers at a rate of 500,000 per month.

US market for these new wireless Internet access devices and Internet appliances totaled **5.9 million units in 1998** and is projected to reach **55.7 million units by 2002**.



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Market for ASPs



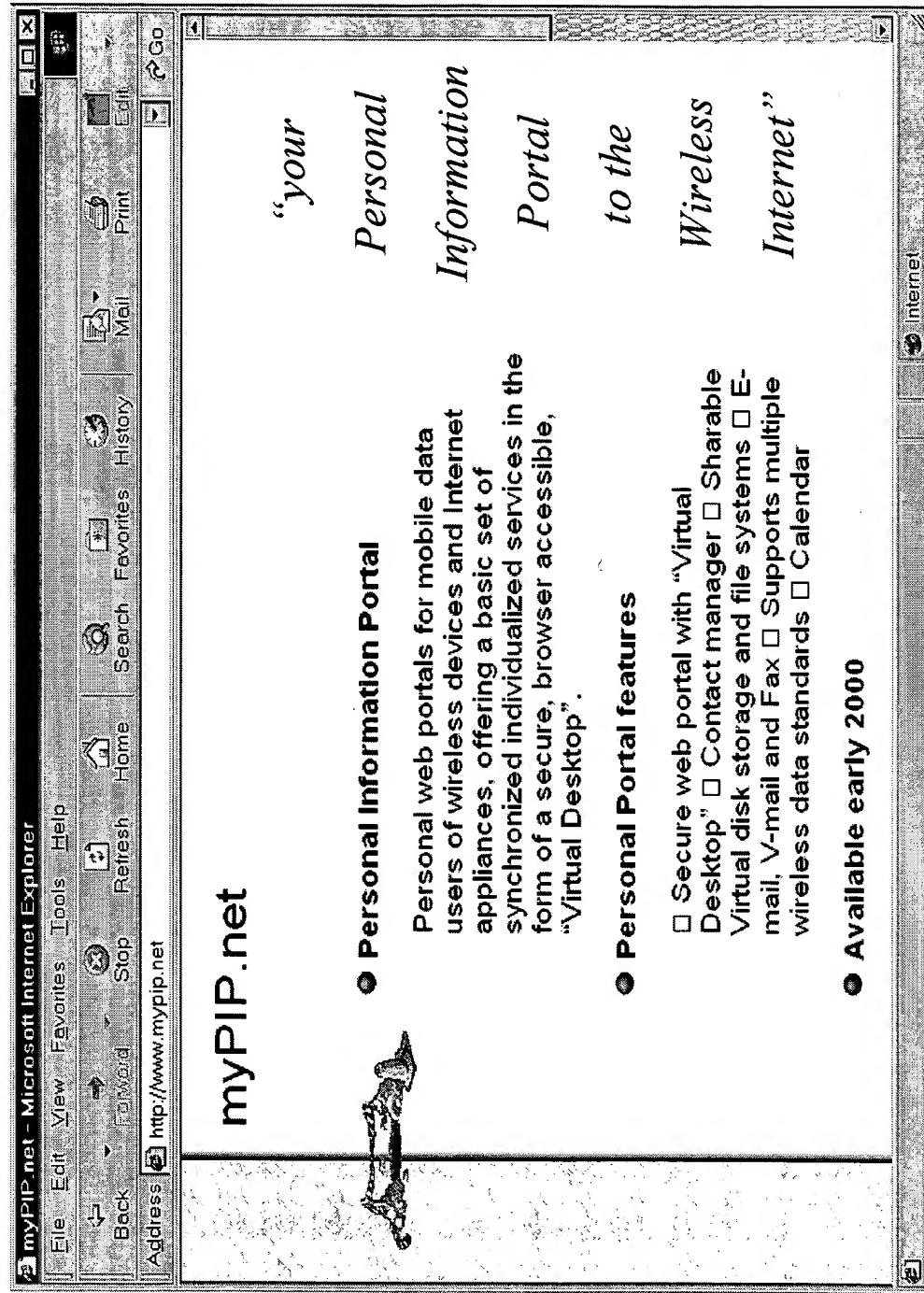
Source: Gartner Group 10/13/99

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12/16/1999



Introducing... myPIP.NET™



The screenshot shows a Microsoft Internet Explorer window with the title bar "myPIP.net - Microsoft Internet Explorer". The menu bar includes File, Edit, View, Favorites, Tools, and Help. The toolbar includes Back, Forward, Stop, Refresh, Home, Search, Favorites, History, Mail, Print, and Go. The address bar shows the URL "http://www.mypip.net". The main content area displays the myPIP.net homepage with the text "myPIP.net" and "your Personal Information Portal". Below this, there is a section titled "Personal Portal" with the following text: "Personal web portals for mobile data users of wireless devices and Internet appliances, offering a basic set of synchronized individualized services in the form of a secure, browser accessible, "Virtual Desktop".

- **Personal Information Portal**
Personal web portals for mobile data users of wireless devices and Internet appliances, offering a basic set of synchronized individualized services in the form of a secure, browser accessible, "Virtual Desktop".
- **Personal Portal features**
 - Secure web portal with "Virtual Desktop"
 - Contact manager
 - Shareable Virtual disk storage and file systems
 - E-mail, V-mail and Fax
 - Supports multiple wireless data standards
 - Calendar
- **Available early 2000**

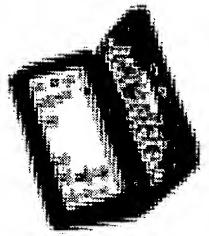
“myPIP.net”

your personal information portal for wireless devices

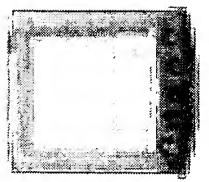
myPIP.net is a personal information portal for wireless devices. It is a central location for managing your personal information and sharing it with your wireless devices. myPIP.net is a secure and reliable way to access your information on the go.



Laptop with cell phone



E-mail Pager



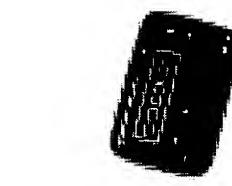
Palmtop



Cell Phone



Smart Phone



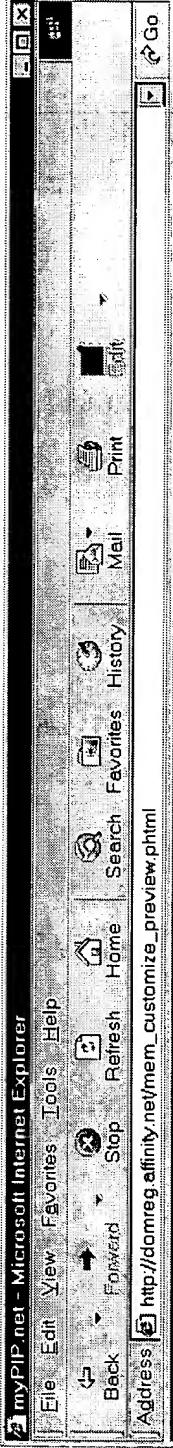
Regular Pager



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12/16/1999

your **Personal Assistant**!!!



myPIP.net - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Print Mail Go

Address: http://domain.affinity.net/mem_customize_preview.phml

myPIP.net

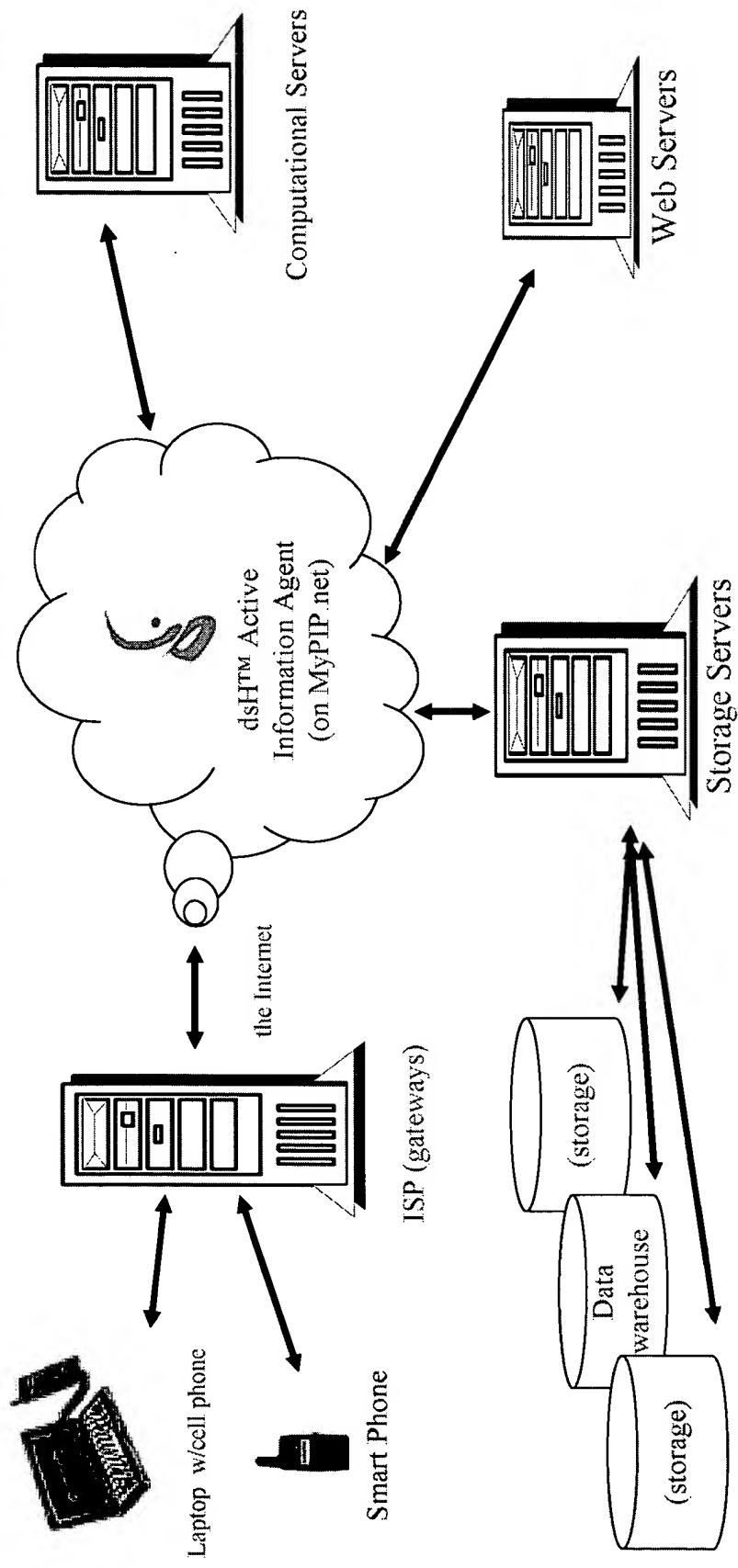
Personal Services:

- Calendars
- Contact Manager
- Document Manager
- Mail message filtering
- Banking & bill paying
- Access Control
- Action/Command Rules

Network Services:

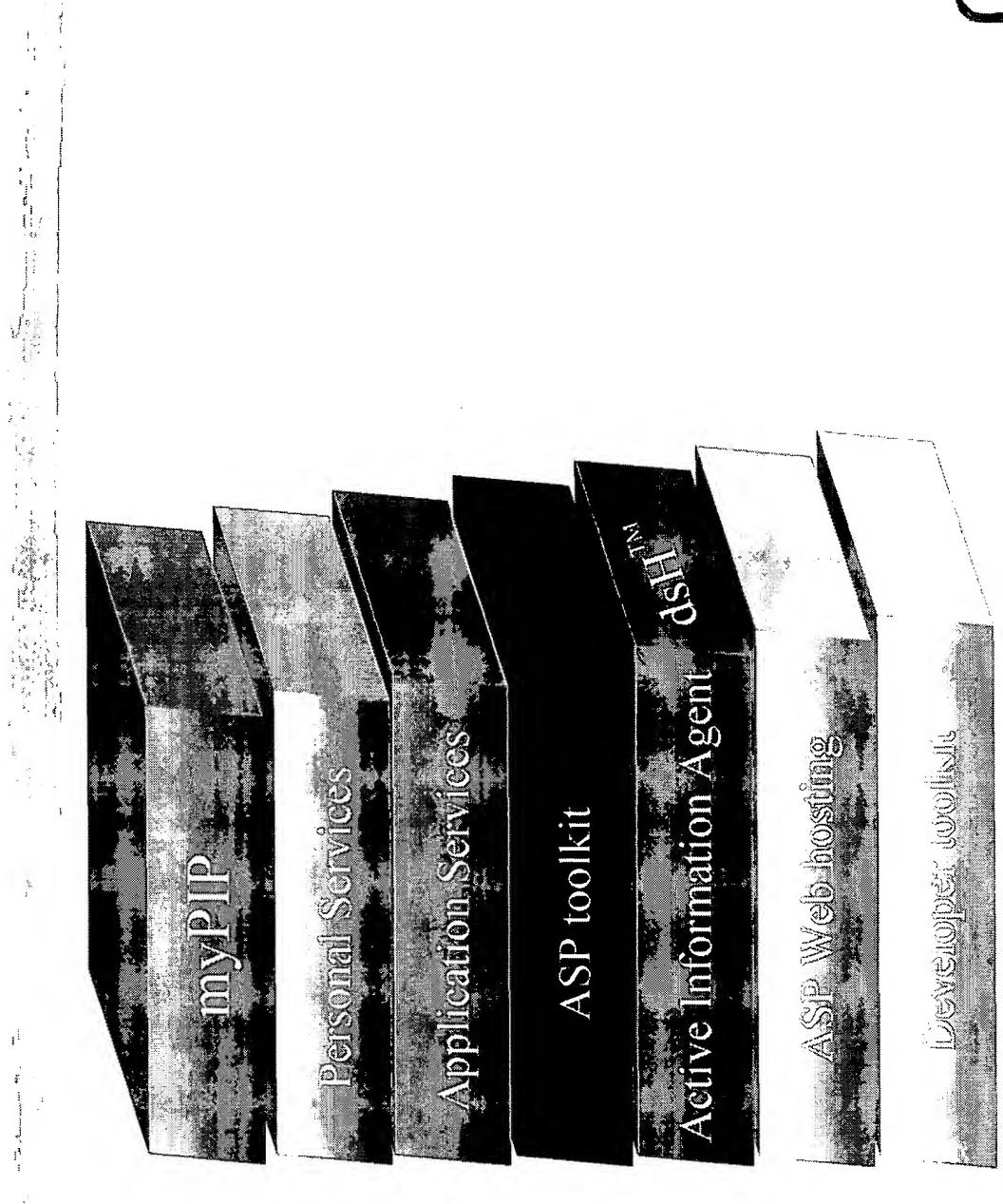
- Web Hosting
- OLAP/Data Warehousing
- News link
- Financial links
- Billing services
- Search Engines
- E-commerce Portals

dsH™ - "mobilizing the Internet"



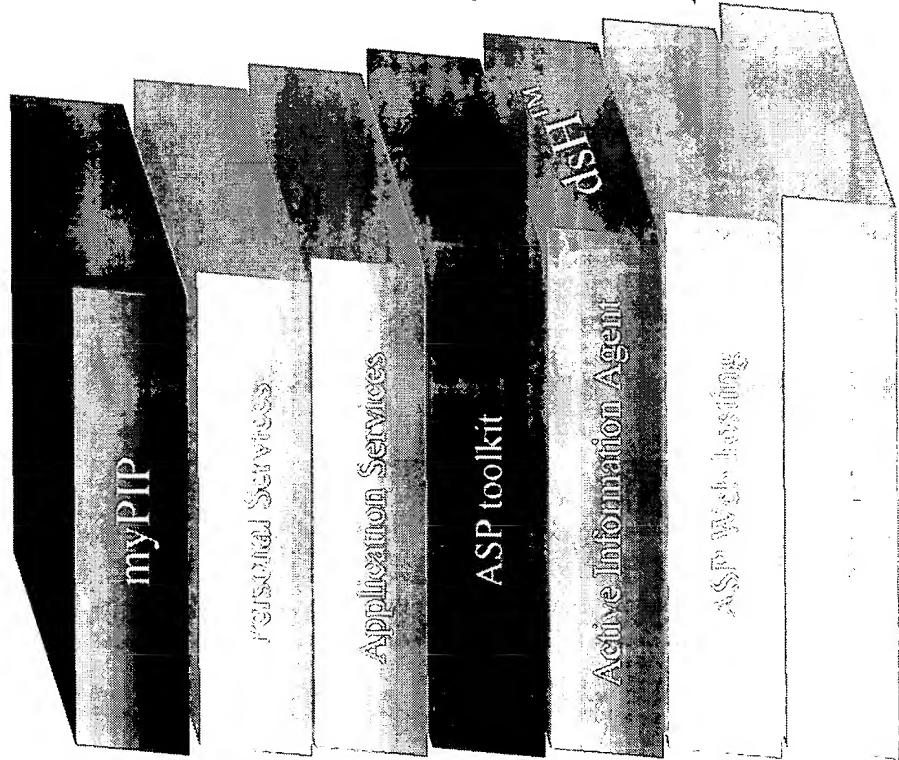
data mapping & workflow engine
built-in drivers for wireless Internet standards
an infrastructure component for integrated delivery networks

myPIP^(tm) architecture



myPIP^(tm) architecture:

Applications Services



myPIP.net: A personalized Information Portal service

mobileASP.net: A service for individuals with domain expertise to create specialized web based applications to be used or marketed in myPIP environment.

myPIA.net: A service for organizations who wish to use the applications development tools to develop proprietary applications.

ASPwebhosting.net: A service for organizations who wish to use external services to host all or part of their computation environment.

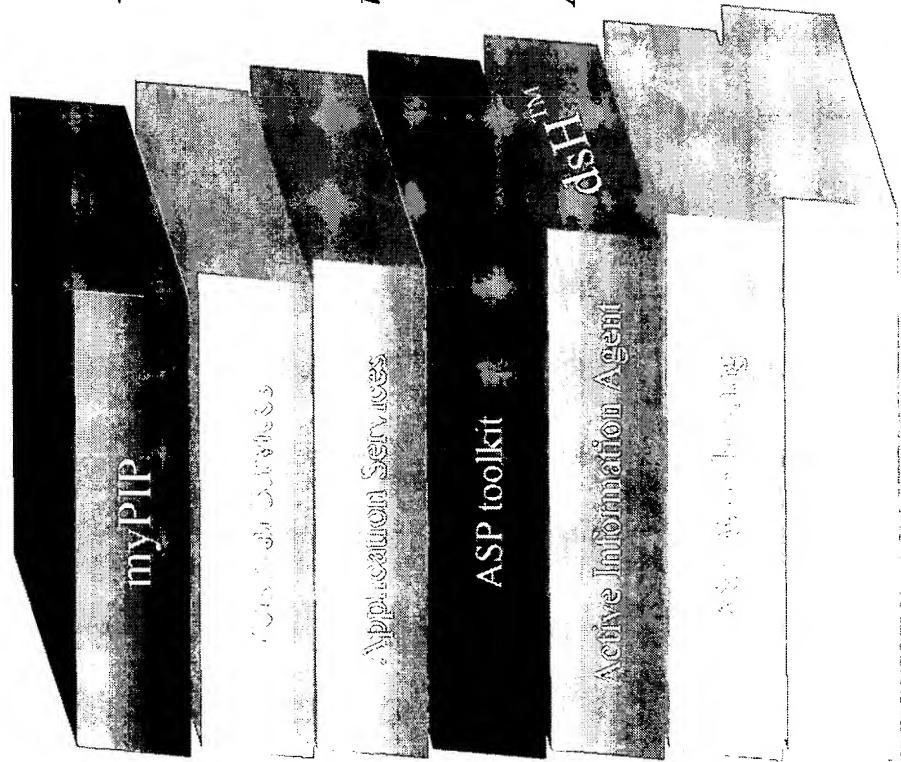


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myPIP^(tm) architecture:

Developer Services



wirelessPIP.com: A forum to communicate information about the latest developments in personalized web based wireless applications.

mobileASP.com: A forum for individuals with domain expertise to market specialized web based applications

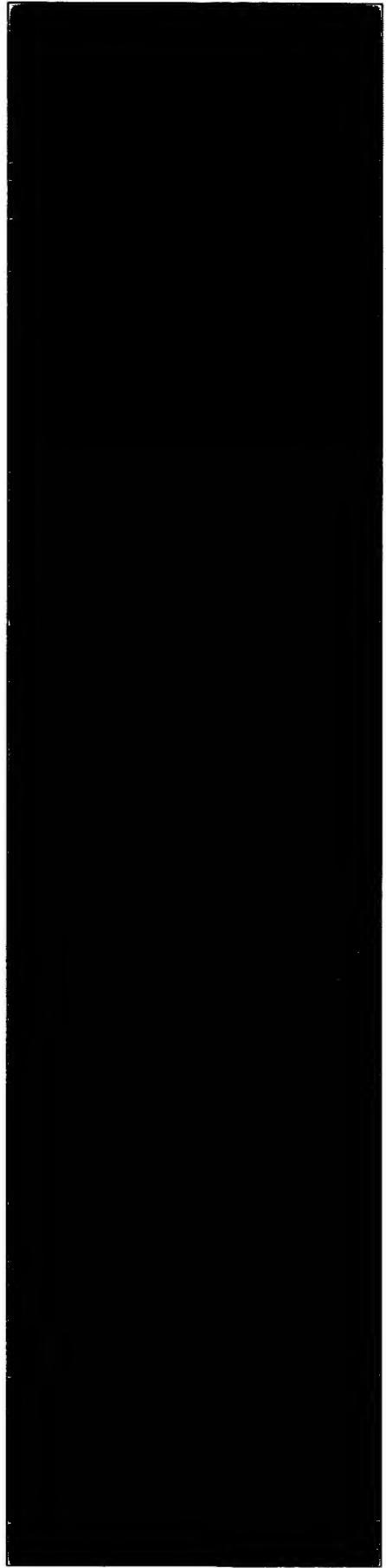
ASPToolkits.com: A forum for individuals with software development expertise to market development tools that operate within myPIP^(tm) architecture.



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Revenue Projected



12/16/1999

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Capital Infusion

Corbyant is a registered trademark of Corbyant, Inc. The dsh™ logo is a trademark of Corbyant, Inc. All other trademarks and service marks are the property of their respective owners.

Corbyant

Develop the Web site to demonstrate the product



Patent the dsh™ technology.

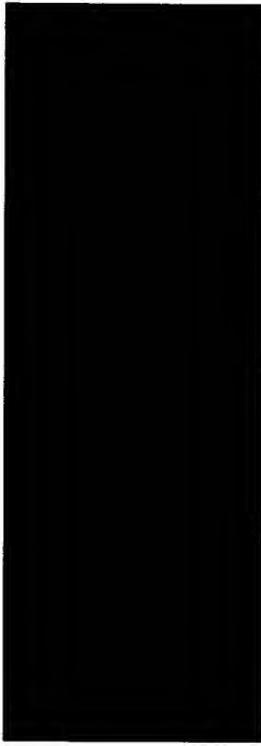


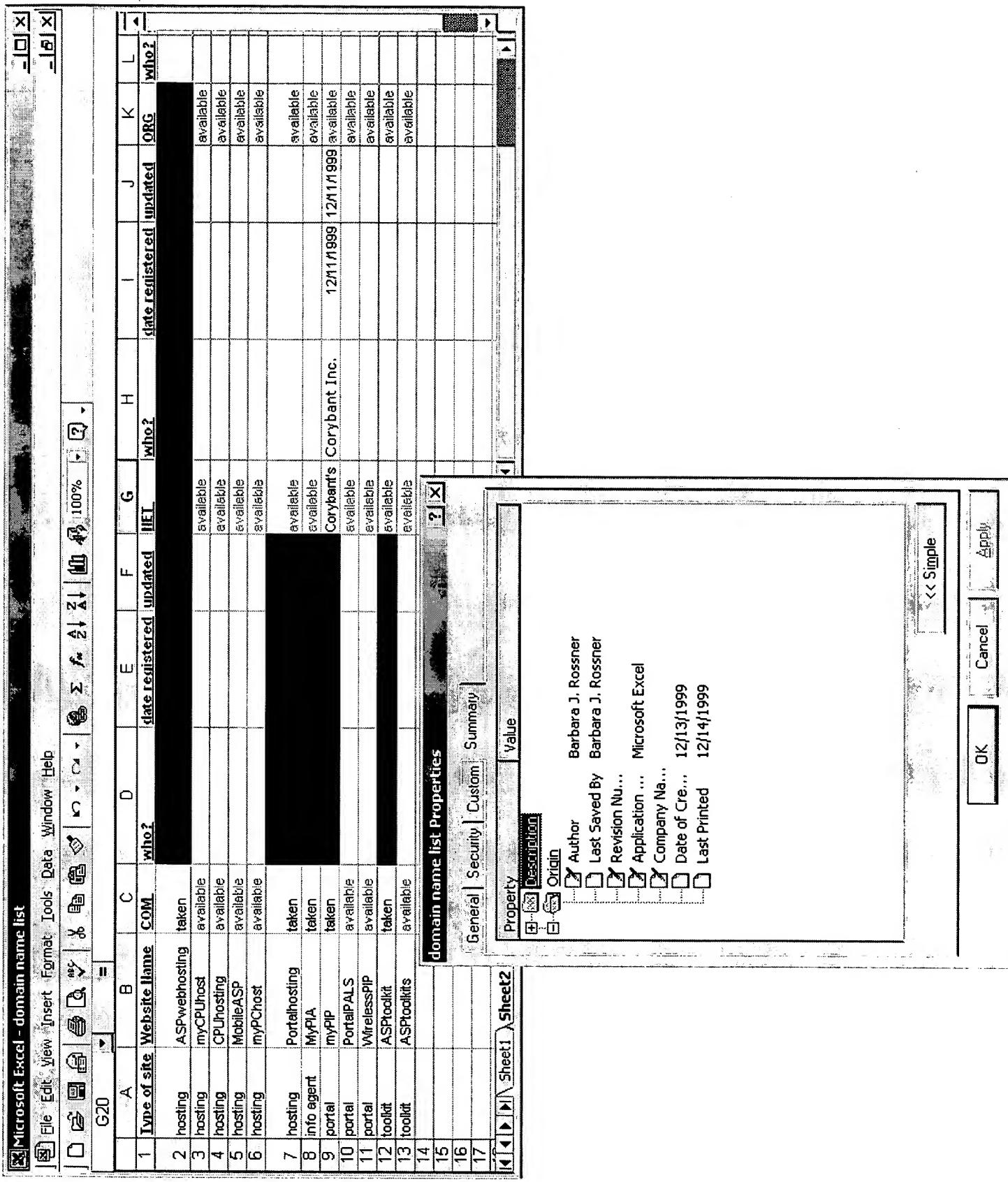
Corybant, Inc.



SM

for additional information contact





Type of site	Website Name	.COM	who?	date registered	updated	NET	who?	date registered	updated	ORG
hosting	ASPwebhosting	taken				taken				
hosting	myCPUhost	available				available				available
hosting	CPJhosting	available				available				available
hosting	MobileASP	available				available				available
hosting	myPChost	available				available				available
hosting	Portalhosting	taken				available				available
info agent	MyPIA	taken				available				available
portal	myPIP	taken				available				available
portal	PortalPALS	available				available				available
portal	WirelessPIP	available				available				available
toolkit	ASPhoolkit	taken				available				available
toolkit	ASPhoolkits	available				available				available

Microsoft Excel - Corybant Product strategies	
File	Edit
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<input type="button" value="Save"/>	<input type="button" value="Save As"/>
<input type="button" value="Print"/>	<input type="button" value="Print Preview"/>
<input type="button" value="Exit"/>	<input type="button" value="Close"/>
F22	=
A	B
1	Description of revenue stream
2	Baseline "personal desktop portal"
3	Secure Web Portal (levels of security?)
4	E-mail, V-mail, Fax (up to 5 accounts)
5	Contact Manager (up to "X" number of contacts)
6	Calendar
7	Virtual disk storage & file system w/share drives
8	Banking (auto bill-paying)
9	Additional Features
10	Additional security
11	Add'l E-mail, V-mail, Fax accounts
12	Add'l Storage space
13	Domain Name Registration
14	Domain Linking Feature (link to your website)
15	Banking (add'l, transactions)
16	Enhancements (optional services):
17	Wall Street Journal
18	Business Week
19	Fortune
20	HotWatch (top stock reports)
21	On-line trading
22	Quicken (personal accounting program)
23	MS Office
24	Tax programs (on line filing IRS & State)
25	Discounted Travel - Airline, Auto, Lodging
26	Personal Shopper
27	...
28	Strategic Alliances
29	Banking transactions
30	Businesses with auto payment linking

Description of revenue stream		Estimate Pricing	Based on...	Individual Users	Business Users	Enterprise Users
Baseline "personal desktop portal"						
Secure Web Portal (levels of security?)						
E-mail, V-mail, Fax (up to 5 accounts)			5 accounts			
Contact Manager (up to "X" number of contacts)			250 names			
Calendar						
Virtual disk storage & file system w/share drives			10 meg			
Banking (auto bill-paying)			up to 20 transactions			
Additional Features						
Additional security			3 levels			
Add'l E-mail, V-mail, Fax accounts			each add'l account			
Add'l Storage space			each add'l "?"			
Domain Name Registration			every 2 years			
Domain Linking Feature (link to your website)			monthly			
Banking (add'l, transactions)			per transaction			
Enhancements (optional services):						
Wall Street Journal			monthly			
Business Week			annual			
Fortune			annual			
HotWatch (top stock reports)			annual			
On-line trading			per transaction			
Quicken (personal accounting program)			monthly			
MS Office			monthly			
Tax programs (on line filing IRS & State)			each return			
Discounted Travel - Airline, Auto, Lodging			per transaction			
Personal Shopper			monthly			
...						
Strategic Alliances						
Banking transactions			per transaction			
Businesses with auto payment linking			per transaction			
Advertising						
Banner Ads			Per thousand hits			
Banner Buttons			Per Market/per Month			
Tiles			Per thousand hits			
Chat room			Per Market/per Month			
Market Research / Strategic Alliances						
Monthly reports			monthly / per market			
Annual reports			annual / per report			
...						

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DATASOURCE HARMONIZER

BACKGROUND OF INVENTION

1. Field of Invention

This invention relates to processes governing the implementation of a collaborative computing environment within an enterprise and, more specifically, to a core software component (the Invention) which makes it possible to implement this environment. The result of deploying the Invention is a virtual, interactive, information management system that is not uniquely dependent on any server or any specific apparatus for its operation. The implementation of the system can utilize a variety of electronic data processing devices to assist the users' interaction with the system and data storage serves and communication links to provide for storage and transmission of persistent information. Electronic devices as identified above may be workstations, laptop computers, and hand held data entry and communication devices. The choice of these devices is based on the needs of the users of the system and the system itself is not dependent on any apparatus.

2. Description of the Related Art

Building an information system for specific business or other enterprises is an important and difficult problem. The following discussions will stress building an information system for the health care industry and its enterprises for HomeCare, a home care agency¹, as an example in describing the problem that is addressed by the Invention in the interest of clarity, but not as a limitation, and because of the growth of this industry in recent years. Industry sources report the current market for healthcare information technology in the United States to be \$17.3 billion in 1997 and project the market to grow to \$27.9 billion by 2002. Of that market, the second highest IT priority for 1998 is integrating (connecting) systems in a multi-vendor environment (second only to recruiting and retaining qualified IT staff; as reported in the Ninth Annual HIMSS Leadership Survey).

The problems in this industry are a result of a complex shift in needs in the healthcare community. First, the level of sophistication in the practice of information management is rising. Specifically:

- Healthcare professionals are shifting away from simply operating vendor-supplied application programs. These professionals are attempting to select or even implement information system that incorporate their own policies and practices.
- Powerful desktop computers, high bandwidth networks, and the explosion in the use of the Internet have created a situation where distributed computing is commonplace.
- The recent release of healthcare industry information exchange standards such as HL7, DICOM, CCOW, and XML have resulted in a language set that makes it possible to create healthcare translators.

Secondly, the technology base that governs the implementation of existing solutions has proven to be inadequate to meet the increased demand on effective information management, for example:

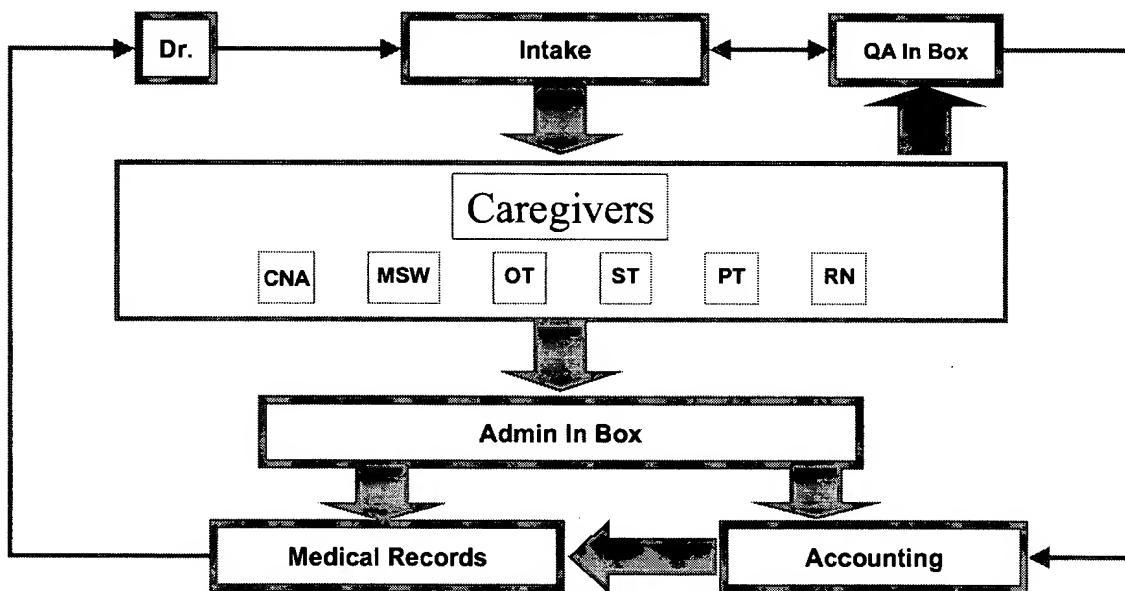
- The creation, usage and management of information have been severely hampered by the number of proprietary data protocols presently in use in the healthcare industry.

¹ We are using a regulated agency as an example because the processes governing the operation of such an organization are clearly defined and well documented. We are assuming that HomeCare is conformant to the appropriate regulations therefore avoiding a possibly long discussion relating to its operational maturity.

1 • The increasing pressure by payor networks and government regulations for cost reductions has created an
 2 extreme need for caregivers and administrators to have access to high quality, timely information.
 3
 4 • Software systems presently offered to the healthcare industry are not user configurable and disrupt the
 5 workflow of the business. For caregivers who are most pressed for time and therefore resistant to change,
 6 adoption of these systems is difficult at best case and totally ineffective in most cases
 7

8 The mission of HomeCare is: "to provide a comprehensive range of home care services to the community
 9 and strive for the highest level of professional and technical competence in those services".

10 Figure 1 provides an organizational view of an information system for HomeCare. Activities in this
 11 organization are substantially influenced by two external sources: the Doctors and the Payers. Additionally,
 12 regulatory considerations impose requirements from the perspective of quality and longevity of the patient
 13 records. Furthermore, professional and business considerations impose requirements about timeliness of services
 14 and preparation of information relative to the services. Caregivers deliver the actual services that HomeCare
 15 offers according to methods and policies that are accepted by the Caregiver community in general and that are
 16 modified to fit the specific needs of the professionals who are employed by HomeCare.



17
 18 **Figure 1. Organizational view of an Information system for a home care agency**

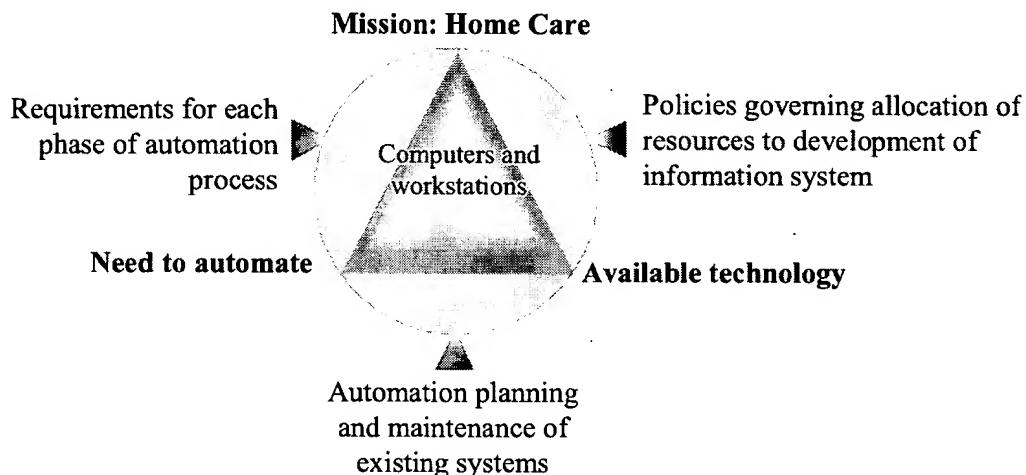
19 Within this organization, policies regarding formal flow of information are based on:
 20 • Agreements among individuals and groups,
 21 • Job assignments,
 22 • Government regulations,
 23 • Policies of payers and Doctors or client hospitals.

24 It is important to recognize that these policies are NOT based on implementation considerations of the
 25 electronic data processing and communication equipment.

26 Moving toward automation: The traditional approach

1 However, management understands that proper use of state of the art technology in information
2 management can improve quality and reduce operating cost. Management has identified an important focus area
3 for process improvement as automation. It has specified a goal to: "*develop a strategic plan and budget to*
4 *support the automation of core business processes including tactical planning for interim computer operations,*
5 *and the evaluation of appropriate available computer technology in moving toward an electronic patient record*
6 *and total electronic bill generation*".

7 The phrase "appropriate available computer technology" represents an element of the operational
8 processes that are not under the control of any of the factors identified above. Given the above statement of
9 objectives and operational realities, it seems inevitable that the organization will move toward higher degrees of
10 automation in phases. A traditional decision process to prioritize the goals of each phase of automation will utilize
11 a decision support model² that is shown in Figure 2.



12 **Figure 2. Decision support model based on state of technology**

13 This model identifies the elements of the decision process and highlights the relationships between these
14 elements. It demonstrates the following principals:

- 15 1. The overall objective is to improve the effectiveness of the organization toward performance of its
16 mission, which is to provide care for patients at their home.
- 17 2. The organization's mission and the need to automate some portion of the business drive requirements for
18 each phase of automation.
- 19 3. The specific goals of each phase of automation will be determined by the individuals or groups who are
20 impacted (expressing or resisting the need to automate) and the state of tools and services that are
21 affordable to the organization (available technology).
- 22 4. Policies that reflect the organization's mission as well as the available technologies govern the allocation
23 of resources to each phase of automation.

24 This is a commonly used model and somewhat intuitive from the perspective of those who supply services
25 and technology to this organization. However this model is biased toward technological considerations at the
26 expense of organization's need to plan and execute its long-term goals and decisions based on this model tend to
27 create conflict between the users and service providers.

² This decision support model is part of inventors' proprietary product development framework. It is an element of the patent application: "myPIP: A framework for a user centric system for storage, retrieval, management and communication of diverse information at a global level."

A frequent outcome of using this model to support of automation decisions is to limit the practices of various segments of the organization to the capabilities of the most recently installed component of automation. In this way, the organization can reap the benefits and amortize the cost of each investment before committing to further enhancements. It may take the organization 6-12 months to adopt an automation component, and the nature of HomeCare's business that forces it to use only proven products. Phased implementation further exasperates this situation by forcing the projects to execute in a sequential manner. These facts practically guarantee that the HomeCare is using obsolete products at all times and in all departments.

Traditional implementations of information system fail to support this approach because they are based on the architecture of one or more information-processing engine (computers and workstations) as the central component of the information management system. The invention that is being described in these notes makes it possible to put the needs of the users of the information system in the center of the decision support process because it facilitates creation and maintenance of an active Information Model.

Vendors of integration and connectivity engines, such as HIE, STC or TSI, have adapted solutions to the healthcare IS market that were originally designed for financial computing. Impetus for development of these products has been mainframe computing, a characteristic that is reflected in their functionality, packaging, and cost structure. The problems of clinical healthcare, however, include image and records management and operational protocols, as well as data communications protocols and formats. These problems are not addressed by those solutions, making those solutions inappropriate for this market segment.

SUMMARY OF THE INVENTION

Objectives:

The methods and systems of the invention are designed to meet the business needs of enterprises, specifically those of healthcare providers. In this regard, the objectives of the method and system of the invention include the following:

- Information systems and applications must be easy to purchase and provide and immediate ROI.
- They must integrate easily into the existing environment and be easy to use.
- They should be configurable to allow the business to incorporate its unique processes. “I want it my way, not the way a programmer thinks I want it” is a phrase we have heard over and over during our market research interviews.
- They should be compliant with current and immersing medical communication and reporting standards (i.e. ASTM, IEEE P1073, DICOM, HL7, OASIS and MDS).
- They should be flexible, enabling access to a wide variety of databases and data sources and possess the ability to change as business processes change.
- Information management solutions must be scalable to allow the business to start small, yet maintain the ability to grow as business needs dictate.
- Technology must be supported, if not embraced, by leading healthcare IS professionals (i.e. consultants and systems integrators) to allow healthcare providers to enlist knowledgeable support when they are consolidating or downsizing their operations.

1 With these objectives in mind, the result of deploying the Invention is a virtual, interactive, information
2 management system that is not uniquely dependent on any server or any specific apparatus for its operation. The
3 implementation of the system can utilize a variety of electronic data processing devices to assist the users' interaction
4 with the system and data storage serves and communication links to provide for storage and transmission of
5 persistent information. Electronic devices as identified above may be workstations, laptop computers, and hand
6 held data entry and communication devices. The choice of these devices is based on the needs of the users of the
7 system and the system itself is not dependent on any apparatus. The primary governing factors in the information
8 system that deploys the Invention are the processes that the user community has adopted in contrast to a
9 traditional information system that imposes processes that facilitate use of its components.

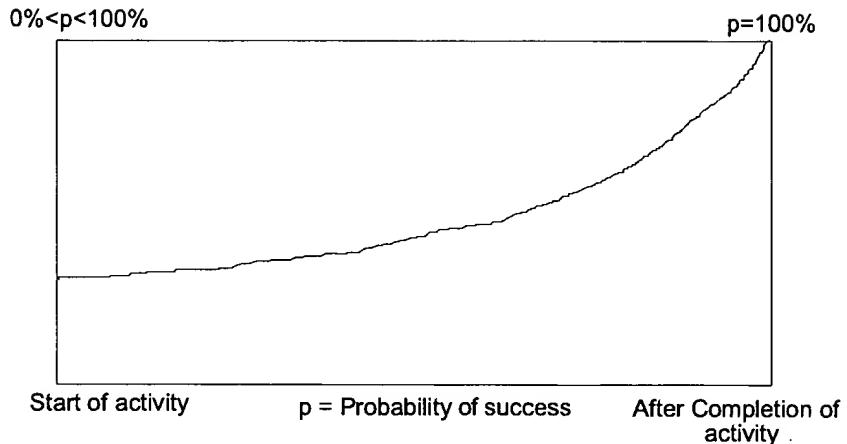
10

11 Definition of Process.

12 *1: a particular course of action intended to achieve a results; "the procedure of
13 obtaining a driver's license"; "it was a process of trial and error" [syn:
14 procedure]*
15 *2: a sustained phenomenon or one marked by gradual changes; "events now in
16 process"; "the process of calcification begins later for boys than for girls"*
17 *3: the performance of some composite cognitive activity; an operation that
18 affects mental contents; "the process of thinking"; "the act of remembering"
19 [syn: cognitive process, operation, cognitive operation, act]*
20 *4: a writ issued by authority of law; usually compels the defendant's attendance
21 in a civil suit; failure to appear results in a default judgment against the
22 defendant [syn: summons]*
23 *5: a mental process that you are not directly aware of; "the process of denial"
24 [syn: unconscious process]*
25 *6: a natural prolongation or projection from a part of an organism either animal
26 or plant; "a bony process" [syn: outgrowth, appendage] v 1: deal with in a
27 routine way: "I'll handle that one"; "process a loan"; "process the applicants" 2:
28 subject to a process or treatment, often with the aim of readying for some
29 purpose; "process cheese"; "process hair"; "process water" [syn: treat] 3:
30 perform mathematical and logical operations on (data) according to
31 programmed instructions in order to obtain the required information; "The
32 results of the elections were still being processed when he gave his acceptance
33 speech" 4: institute legal proceedings against; file a suit against; "He was
34 warned that the district attorney would process him" [syn: sue, litigate] 5: shape,
35 form, or improve something: "work stone into tools"; "process iron" [syn: work,
36 work on] 6: serve somebody with a warrant or summons; "He was processed by
37 the sheriff" [syn: serve, swear out]
38 *7: march in a procession; "They processed into the dining room" [syn: march]*
39 Source: WordNet® 1.6. © 1997 Princeton University*

40

41 The concept of "process" as used in the context of The Invention indicates a continuous focus by the
42 participants on achieving the intended results. Specifically, and for the purposes of information management, a
43 process is the formal element for managing the probability of success during the course of an activity.



2 There is a chance that any activity that is undertaken by an organization may fail i.e. probability of
 3 success for that activity is less than 100%. Once the activity is completed and the expected results are achieved
 4 the probability of success is 100%. A process is the thoughtful and formal method that is adopted by the
 5 individual or organization for systematically improving the probability of success from its starting value to the
 6 success outcome.

7
 8 The active elements of any process in an organization are the individuals who participate in the process.
 9 Within the framework of the governing process these, individuals evaluate progress, and redefine and execute the
 10 specific actions that result in improving the probability of success. An information system that serves such a
 11 process must facilitate this redefinition and execution of these specific tasks. It follows that a critical attribute of
 12 The Invention is its ability to model an existing process into a coherent, active information base whose behavior is
 13 continually updated and reconfigured by its users.

14
 15 Description of the problem:

16
 17 To Harmonize: To adjust in fit proportions; to cause to agree; to show the agreement of; to reconcile the apparent
 18 contradiction of
 19 . (From Webster's Revised Unabridged Dictionary 1913)

20
 21 Moving toward Automation: The Harmonized approach

22
 23 An alternate model to that shown in Figure 2 is demonstrated in Figure 3. In this model, the focus of
 24 business automation is the users of the information system. It reflects an overall process that is governed by the
 25 mission of the enterprise, the need to improve information management, and an Information Model, which
 26 reflects a definition of the information requirements of the user community.

27 The decision process for each phase of automation is a step within this overall process and can benefit
 28 from the lessons learned from previous phases. Technology considerations, which are by nature variable, are also
 29 included in the process of implementing the infrastructure but they do not govern the process of automation.

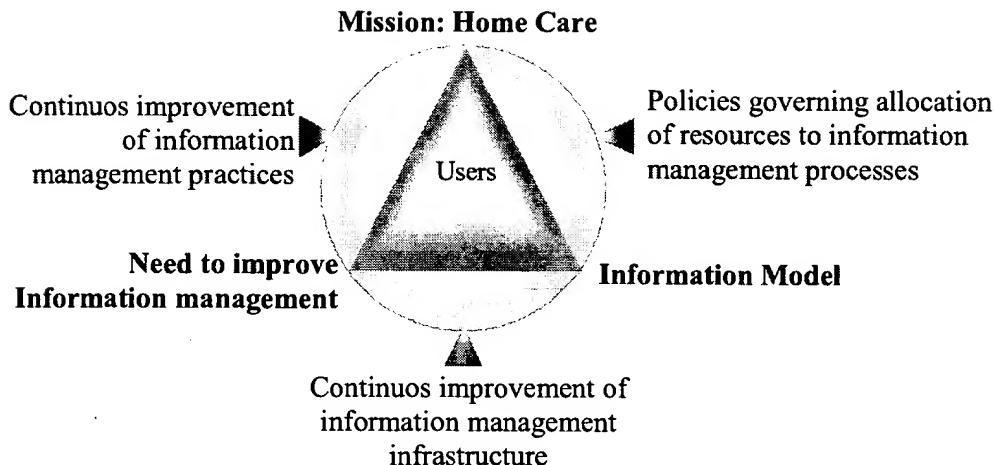


Figure 3. Decision support model based on business considerations

3 Using this model, the organization defines its automation strategy the basis of the Information Model rather
 4 than technology. Tactical considerations balance the need for continuous improvement against the limitations of
 5 the available technologies:

- 6 1. The overall objective is to improve the effectiveness of the organization toward performance of its
 7 mission which is to provide care for patients at their home.
- 8 2. The organization's mission and the overall need to improve its ability to manage its information base
 9 influence requirements for each phase of automation.
- 10 3. The specific goals of each phase of automation are determined by balancing the need to improve
 11 information management practices and practical improvements to the organization's view of its
 12 information needs. These needs include changes to users' practices as well as affordability of the
 13 underlying technology.
- 14 4. Policies that govern allocation of resources to each phase of automation are influenced by the
 15 organization's model of its information as well as its mission (home care).

16 The primary function of the invention is creation and continuous improvement of an information system by
 17 the individual or organization that deploys a computer system to serve an enterprise. The Information Model:

- 18 • Identifies the individual roles within the organization
- 19 • Identifies location and characteristics of sources and destination of the information elements that are used
 20 or created by each role (the relationship of each role to the data)
- 21 • Specifies the rules of translation between elements of data, from the perspective of each individual role.
- 22 • Specifies actions that are taken by each role relative to the information (the relationship of roles to one
 23 another).

24

25 The core components of the invention that support these features are:

- 26 1. A persistent record that describes above information for each role: **Configuration**
- 27 2. A software program that uses this information to perform the specified actions for each role: **Engine**
- 28 3. A formalism that provides for translating the needs of the organization into configuration records for each
 29 instance of the Engine: **Process**.

1 The invention is a method and system embodied in a datasource harmonizer that facilities
2 implementation and deployment of adaptable collaborative enterprise-wide information management
3 system.

4 It includes a software component that is a program that can operate independent of other programs within a
5 computer system. This program operates as a system service which means that it may be directly exposed to the
6 user of the computer or it may receive its instructions from other application programs that are either running on the
7 computer in question or have the ability to communicate with this computer. (industry term: Engine).

8 The Engine is implemented as a group of independent, homomorphic components with specific structure and
9 interfacing rules (industry term: Objects). Current embodiment of this basic invention is exemplified in its test
10 implementation within the framework of a Component Object Model and it is itself an Object, that is to say multiple
11 copies of it may be present within the system. {Note: A Component Object Model (COM) object is software
12 industry's analog of an integrated semiconductor circuit. It is an area within the computer's memory that has a
13 specific program and a starting point known to a service handler. A service handler is analogous to a printed circuit
14 board and installing a COM object in the system is analogous to placing the chip on the printed circuit board.}

15 Using this Engine in various workstations and servers within an enterprise makes it possible for the organization to
16 create an active model of an organization's information use and management practices (an information model).
17 "Active model" implies that this model is defined and modified as needed and in real time to reflect the
18 organization's structure and is an integral part of the organization's daily operation. "Real time" means that in order
19 to redefine the responsibilities of one component, other components within the system do not have to stop doing
20 their work. The primary benefit is the ability of the organization that uses this Engine to create an information
21 management system, substantially independent of its specific hardware and software components. Specific claims
22 for the patent that covers this invention will address the elements of the software system as well as the information
23 model and elements of an information architecture that, once adopted by the organization, makes the overall
24 information system a living and changing component of the enterprise.

25 **Advantages of the Invention over the Prior approaches**

26 The datasource harmonizer is a tool for tailoring enterprise applications programs to satisfy the users' requirements
27 it:

- 28 • Serves as the agent of the user (not as the glue between applications)
- 29 • Satisfies the user's information needs within the enterprise rather than forcing the user to deal with the
30 information that are created by generic applications.
- 31 • Defines the enterprise's Information Management practices as an aggregation of the user's information needs.

32 The datasource harmonizer is a modular software system that supports workflow management, data
33 mapping and application linking. The core component of the datasource harmonizer is an ActiveX® component
34 that is installed in user workstations, laptops or handheld computers throughout an enterprise as needed. The
35 product also includes a utility program for the information manager that is installed in each system or database
36 administrator's workstation. This administrator utility provides the mechanism for the creation and modification
37 of the harmonization rules used by the datasource harmonizer.

38 Most healthcare organizations have developed processes that are specific to their unique needs using
39 generic business software such as Microsoft® Office as the primary data entry and reporting application. The
40 inventors have implemented the catalogue of business and clinical applications that use Microsoft® Office as a
41 front end and connect to various databases within the enterprise via the datasource harmonizer. These solution
42 packages include customizable forms, templates, add-ins, and application-specific macros and utilities. Each Line-
43 of-Business Solution is marketed to address a specific business or clinical application.

1 The datasource harmonizer according to the invention easily and economically transforms any single
2 computer, or group of computers, into a scalable information management system. As such, the entire market of
3 more than 2 million computers in healthcare represents the current demand for the problem resolutions of the
4 datasource harmonizer. The inventors' objective is to position its products as the low cost office automation
5 solutions to connectivity used by all facets of the industry.

6 The datasource harmonizer is designed to address connectivity problems associated with administrative
7 and clinical processes in a distributed computing environment. These problems are currently being addressed on a
8 case by case basis by applications vendors, systems integrators and consultants via complex programming and
9 integration mapping solutions. The datasource harmonizer simplifies the implementation and extends the
10 application of these solutions thereby creating an expanded market opportunity for each of these types of
11 companies. The datasource harmonizer (dsH), is a unique software tool that enables standard desktop office
12 utilities such as Microsoft® Word to manage clinical and administrative workflow and seamlessly map data
13 between multiple healthcare applications and databases. In one embodiment, the engine of the dsH is packaged to
14 work seamlessly with the Microsoft® Office suite of desktop applications. Word processors, spreadsheet
15 programs and personal information management applications (such as e-mail or contact managers) can use the
16 dsH engine to review and input information that up to now has been exclusively available through specialized and
17 complicated applications. Using dsH, business managers can customize the access to and use of information how,
18 when and where they want it.

19
20 Most organizations use office automation utilities such as word processors, desktop database managers
21 and spreadsheet programs. Using the dsH technology, the customer can connect these utilities to enterprise
22 databases, legacy applications or simply connect them together to create an enterprise solution.

23 In contrast, large applications are designed for specific functions within the enterprise but fail to
24 accommodate administrative and clinical processes. dsH provides a simple method for converting a word
25 processor into a powerful report generator or for converting a mail utility into a schedule management tool.

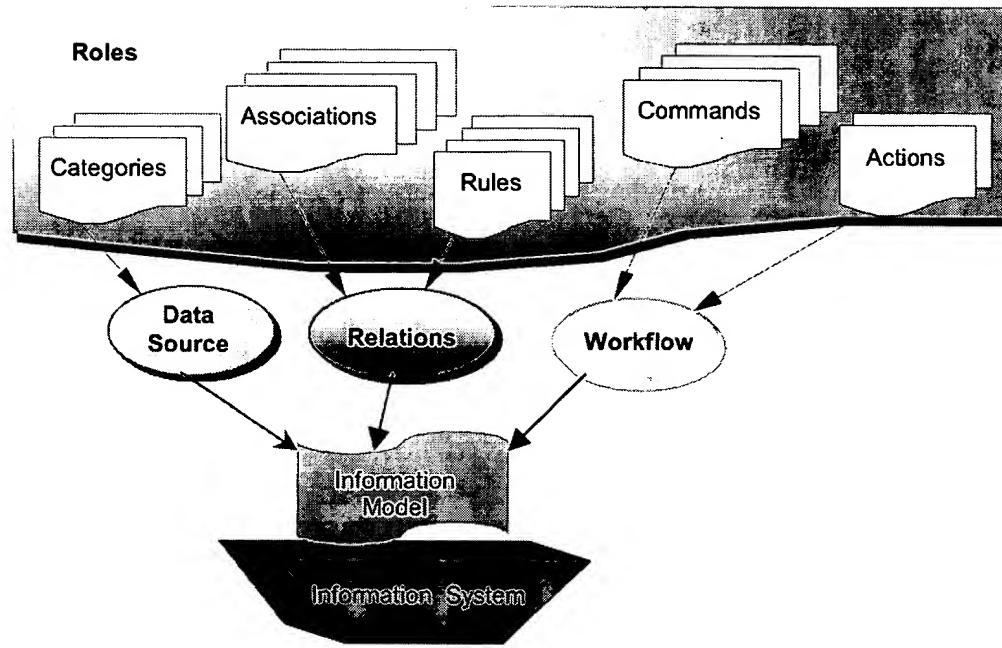
26 In the last few years, it has become common practice for organizations to select vendors based on support
27 of industry standards, primarily in the area of interoperability. The dsH technology leverages this movement and
28 offers an attractive alternative whether the organization is choosing a specific solution or evaluating an enterprise-
29 wide approach to information management.

30
31 **DETAILED DESCRIPTION OF THE INVENTION**

32 **Information Model**

33
34 To be of value in the decision process, an information system must be easy to implement and adaptable to
35 emerging technologies and changing business needs. Its successful implementation incorporates knowledge of the
36 roles of the individuals and workflow within the enterprise. Additionally, it is necessary to implement such an
37 information system incrementally, allowing for the fact that at all times different parts of the enterprise will be at
38 different levels of operational and technological maturity.

39 The four basic elements of the invention reflect these concepts in such a way as to facilitate a formal
40 process for creation and maintenance of an Information Model. These elements are Roles, Data Sources,
41 Relations, and Workflow.



1

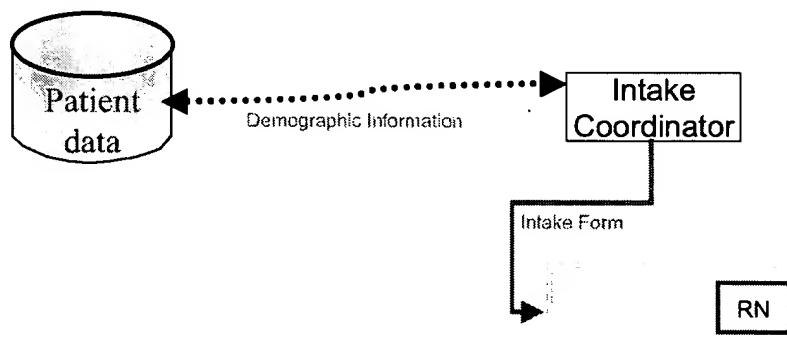
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Figure 4 Basic dsH™ Concepts

3 The invention provides for definition and utilization of these elements, to the extent that is necessary to
 4 create and maintain an Information Model. The focus of the invention is on accuracy of this model and two key
 5 qualities of the resulting information system i.e. serviceability and potential for change. Other key qualities of the
 6 information system (performance, security, and availability) will reflect the behavior of the implementation
 7 platforms.

8 **Roles**

9 The invention provides a mechanism to define a role by specifying the activities that an individual in the
 10 organization will require of the information system, in the course of fulfilling an assignment. For example the
 11 following statement is a part of the definition of a role:



12

Figure 5 Defining the Intake Coordinator Role

1 "To OPEN a Case the Intake Coordinator copies the patient demographic information from patient database into
2 the Intake Form and sends this form to the RN." This statement identifies the following elements of the
3 Information Model:

Data sources	Patient Database and Intake Form
Reference model	the collection of the data fields that describe Patient Demographic information and their relationship to the fields in the Intake Form
Commands	SELECT information defined by patient demographic and INSERT this information into the appropriate fields in intake form
Action	OPEN a Case.

4 **Table 1 Elements of the Intake Coordinator Role**

5 By defining a role in this way, the external sources (to the Information system) where information is
6 created or used are identified. In abstract a role may be described as "external interfaces of the information
7 system". Figure 5 shows a practical view of a role, as a particular aggregation of the internal elements of the
8 information system.

9 **Data Sources**

10 Data source is an abstract concept that encapsulates the sources and destinations of the information. We
11 have used the generic term "data source", in recognition of Microsoft's ODBC and OLEDB initiatives, which are
12 significant contributors to the computer industry's ability to share information between disparate systems. Our use
13 of this term, however, is broader than Microsoft's. We look at data sources as elements of the entire enterprise
14 rather than a component of the computing environment within the enterprise.

15 A data source, as a fundamental element of an Information Model refers to any component of the overall
16 organization where information is stored and is made available according to a well-defined set of rules.

17 Practically, for the purposes of the invention, a data source is defined as any data storage mechanism
18 within the information system for which a formal interface definition is available. This includes databases and
19 application specific file formats and other Engines.

20 **Categories**

21 A reference to a data source within a role as identified as a category. Categories describe the data sources
22 that are used (identification of the logical reference), how to get to them (access parameters) and the way the
23 information within a category is to be treated. For example a category may be a database located at a specific
24 location on a network where the actual data will be accessed. Another category may be a reference schema that
25 describes the way data is organized i.e. *facade*: a view of data into another data source or a report that should be
26 printed or mailed

27 **Relations**

28 Relations are formal, abstract attributes of an Information Model that characterize the relationship
29 between the elements of data sources. The prototype implementation of the Invention include two classes of
30 Relations, namely associations and rules.

31 Consider the statement:

32 *Patient Name on HCFA 485 form includes Last name, First name and Middle*
33 *initial from the patient record. HCFA requires that Patient Name is specified as*
34 *Last name, First name middle initial*

35 This statement describes the Relation between the element Patient Name in data source *HCFA 485 form* and the
36 elements of *First name*, *Middle initial*, and *Last name* in the data source *patient record*.

1 Associations

2 An association is a declaration that a relationship exists between two or more elements of different data
3 sources. In the above example the following associations exist:

4 **HCFA 485 form** **Patient record**
5 *Patient Name* *First name*
6 *Patient Name* *Middle initial*
7 *Patient Name* *Last name*

9 Associations do not imply sequence or cardinality.

10 Rules

11 Rules are the mechanisms that embody an Association. In the above example the Rule relating to the
12 association is:

13 Name <= Last_name<,> First_name <sp> Middle_initial).

14

15 In general, Rules are attributes of Relations and independent of Associations. At the simplest level, this
16 independence may be perceived as a means to re-use a definition of a Rule in the context of multiple Association.
17 Although this is an appropriate example of the relationship between a Rules and Associations it does not
18 completely capture the scope of this concept. For example, the Invention allows for implementation of a time-
19 variant, parametrically defined Rule that creates independent events based on a change in values of the elements
20 within multiple data sources.

21

22 Workflow

23 The Workflow Management Coalition (WFMC) defines Workflow as: "The computerized facilitation or
24 automation of a business process, in whole or part". In the context of the Invention, Workflow refers to those
25 attributes of an Information Model that are concerned with movement of information between different data
26 sources. To a great extent, Workflow is the element of the Invention that creates a unique instance of the
27 Harmonizer Engine, specific to the individual User. The prototype implementation of the Invention included two
28 classes of Workflow elements, namely Commands and Actions. As a general rule, Workflow elements tend to
29 serve as a "verb" in a sentence where Categories serve as nouns.

30 Commands

31 Commands are the lowest level operators for moving data from one data source to another. The most
32 common examples of commands in an Information System are *Select* and *Insert*. As a rule, Commands require
33 parameters that qualify their targets. In the example of section 4.1.3 a Command may be:

34 **select First_name, Middle_initial_Last_name from patient_record where Patient_ID = this_patient**
35 **insert patient_name into HCFA 485 form.**

36 Actions

37 Actions are aggregations of commands that are visible to the run time interfaces of the Engine. In general
38 Actions are used to activate the portion of Information Engine that is specific to an individual user. Actions
39 are generally high level events and include general parameters that define the parameters of the data sources and
40 the context within which information is modified.

41 **Nurse_suzie Admit this_patient**

1 Prototype implementation: The engine

3 The Engine is an Active component, such as a program, that moves information between various data
4 sources within a network. A "data source" can be any collection of data for which a provider can be created (such
5 as a tab separated files, spreadsheets, or named fields in a form, or a table in a relational database). Engines are
6 capable of communicating information in form of data and status i.e. an Engine can see data sources through other
7 Engines and can send and receive events.

8 An Engine may be used as a single utility that simplifies access to various data sources for a single user or
9 device. An example of this kind of application may be a report that is created in a document that uses information
10 from various databases, PACS systems and Hospital Information Management systems. Another example may be
11 a protocol converter for a device within a health information management system. The Engine may also be used
12 as a member of a collection of Engines and facilitate workflow as well as information access. An example of
13 such an application is a Long-Term Care environment where various healthcare professionals communicate with
14 each other through sending and receiving pre-specified forms. Each Engine uses a configuration model file that
15 specifies its associated datasources, trigger events, and mapping rules.

16 Using the Engine a user of a networked workstation can input, export and review information from
17 different databases or documents. The user interface may be desktop applications, Word processors, spreadsheet
18 programs and personal information management applications (such as e-mail or contact managers) as well as
19 many commercially available special purpose applications.

21 Implementation

23 Overview

24 The dsH engine provides the ability to associate or map together various data sources, apply rules to the
25 to the associations and move information between data sources programmatically. The engine exposes this
26 functionality through a set of COM interfaces designed to allow design time configuration, a single universal data
27 source interface and a simple interface to execute the pre-configured information movements. The interfaces are
28 designed to address the needs of several types of users.

Interface	Medical Professional	IT Programmer	Partner Developer	Inventors' Developer
Execute Interface	X	X	X	X
OLEDB Provider Interface		X	X	X
Configuration Interface		X	X	X
OLEDB Consumer Interface			X	X
Persistent Layer Interface				X

31 OLEDB Provider Interface

32 The OLEDB Provider Interface allows the user to connect to the dsH Engine as a data source.
33 The schema exposed is determined by the configuration of the harmonization Model. This interface has
34 two uses in the overall design. First it allows the end user to access any dsH data source through
35 standard database tools found in MSOffice™ or development environments. The second use is to dsH
36 Engine to treat another dsH Engine as a data source.

37 OLEDB Consumer Interface

38 The OLEDB Consumer Interface provides for the connectivity to all external data sources and is
39 the only connection method supported. The dsH Engine can connect to any OLEDB/ODBC provider.

1 Configuration Interface

2 The Configuration Interface (a.k.a. Utility interface) exposes the programming model that
3 allows the creation of the data source harmonization model and the definition of its execution behavior.
4 This interface can be exposed fully for the Partner Level user to develop products that make use of the
5 dsH Engine. It is also exposed in a limited way through wizard to allow the IT Programmer Level and
6 Medical Professional Level users to update and modify their harmonization models.

7 Execute Interface

8 The purpose of the Execute Interface is to provide a simple interface from which to cause
9 Actions to be started within the dsH Engine. This interface has one method which starts an Action and
10 one event which notifies the consumers code that the action has been executed.

11 Persistent Layer Interface

12 The storage of the harmonization model used by the dsH Engine is stored in a file. The Persistent
13 Layer Interface allows for the support of different methods of storage.

14 Information Modeling

15 Information Modeling is the process of maintaining a formal description of how information within an
16 enterprise is created, who creates it, and in what forms it is used. Ultimately an Information Model is a tool that
17 will help with the process of continuously improving the operation of the organization. As a tool of process
18 improvement, the Invention offers four key concepts that are somewhat independent and at the same time
19 collectively provide a complete definition. These key concepts are identified in this section:

20 • Roles: The complete definition of the creators and users of information
21 • Categories: Data sources, schema presentation formats of data containers.
22 • Messages: Information transport media
23 • Actions: Events that govern transmission of messages between roles

24 These concepts are “abstractions” in the sense that each of them is a convenient aggregation of ideas and practices
25 that satisfy the needs of a particular view within the enterprise.

26 Roles

27 The most basic concept in the Invention is the concept of a Role. A Role is a description of a collection of
28 assignments, usually associated with an individual or group with a specific set of credentials. Table 2 is an
29 overview of the relationship between a role and the flow of information.

Abstractio n	Described in terms of...
Role	Qualifications of the individuals e.g. Registered Nurse, Certified Records Administrator
Assignments	Objectives described qualitatively e.g. Admit a patient, Maintain patient records.
Tasks	Measurable goals e.g. complete intake form, perform initial case assessment.

Table 2

To satisfy the needs of creating and maintaining an Information Model, identification of a given role is sufficient. In fact deeper abstractions will create an obstacle to exploring alternative approaches within the overall objective of continuous improvement. This is in contrast, for example, to the process of application development where it is necessary to categorize the tools that are needed in performing each task.

6 The fact that the end users of the Invention product are practitioners within a regulated industry makes the
7 concept of a “Role” a key concept in Information Modeling. Within this industry, the qualification of an
8 individual practitioner, more than the business considerations, determines the assignments that they can accept
9 and the information that they need in order to meet the objectives of those assignments.

11 Categories

12 Within the organization, however, different roles can collaborate because they share *perspectives* on
13 information. A *perspective* is an agreement on how to view information. A category is an abstraction that
14 identifies a “view” of the information that may be useful to a group of perspectives.

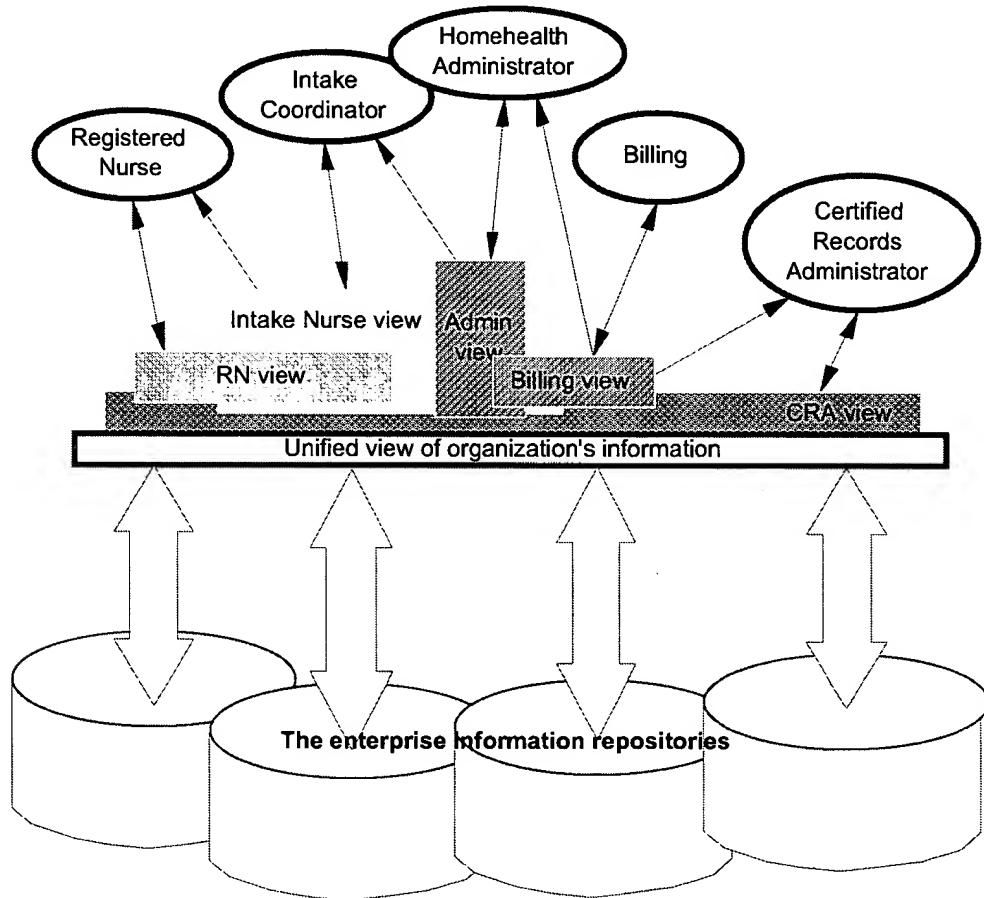


Figure 6 Perspectives and Views of Information

17 Using this framework, the following concepts are of interest in defining categories.

- Data repositories
- Data repositories as viewed through roles
- Reference categories

1 • Facades

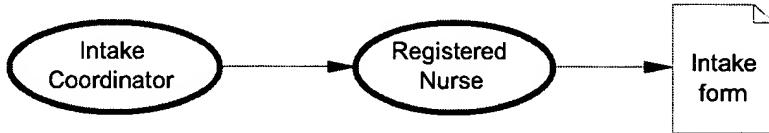
2 The first two concepts are concerned with the sources of information whereas the last two deal with creation and
3 maintenance of the Information Model itself. A good general rule is design of an Information Model is that
4 reference categories are inventions that facilitate dealing with data repositories and facades are inventions that
5 facilitate dealing with roles.

6 Data repositories

7 For the purposes of Information Modeling any persistent medium that may contain information is a data
8 repository. For practical purposes the information flow in and out of a given data repository is subject to its
9 specific characteristic. For example in the context of an automated document management system, a hand written
10 document that will be stored as apart of patient's medical record is a valid data repository with a somewhat
11 complex interface rules. For the purposes of Information Models related to the use of the Invention, machine
12 accessible data repositories are the primary consideration.

13 Repositories viewed through roles

14 For all purposes, roles appear as sources of information to other roles. In practice, however, it is
15 the view of information from within a role that is of interest to other roles.

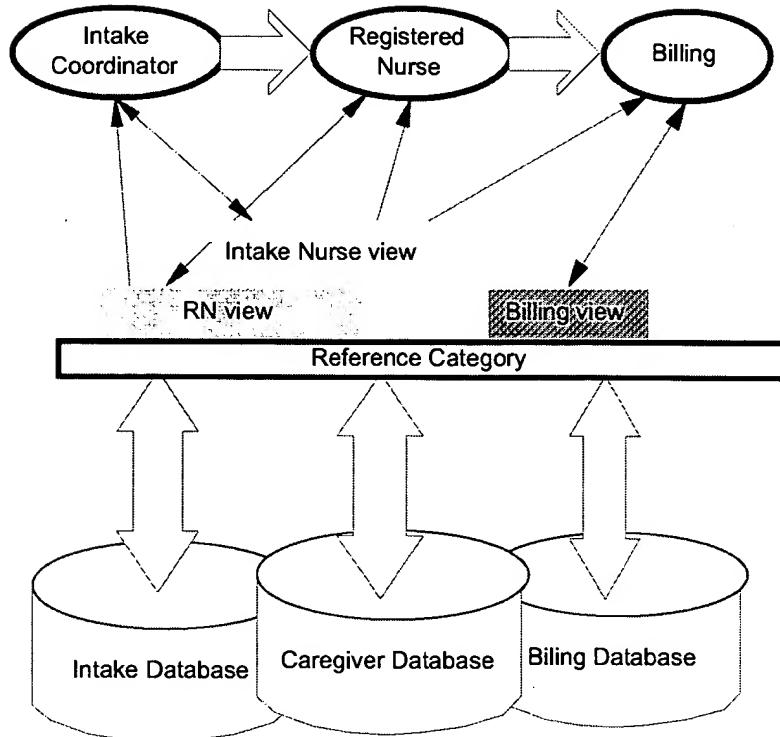


16 Figure 7 Repositories viewed through Roles

17 For example in figure 7 the *Intake Coordinator* can see *Intake form* through the role *Registered Nurse*. Here,
18 Registered Nurse is providing a data source to the Intake Coordinator. In practice, this concept is best
19 implemented through the use of Facades, which makes it possible to manage access to data sources.

20 Reference Categories

21 Two significant problems in Information Modeling are initial creation and maintenance of the model. The
22 reference category is a useful invention to help with this problem. Typically a group of roles within an
23 organization contribute to accomplishing a particular objective. For example the Intake Coordinator opens a case
24 and assigns it to a registered nurse that will then make an assessment and creates the care program. During the
25 period that the case is open various professionals will access and input information related to it.



1

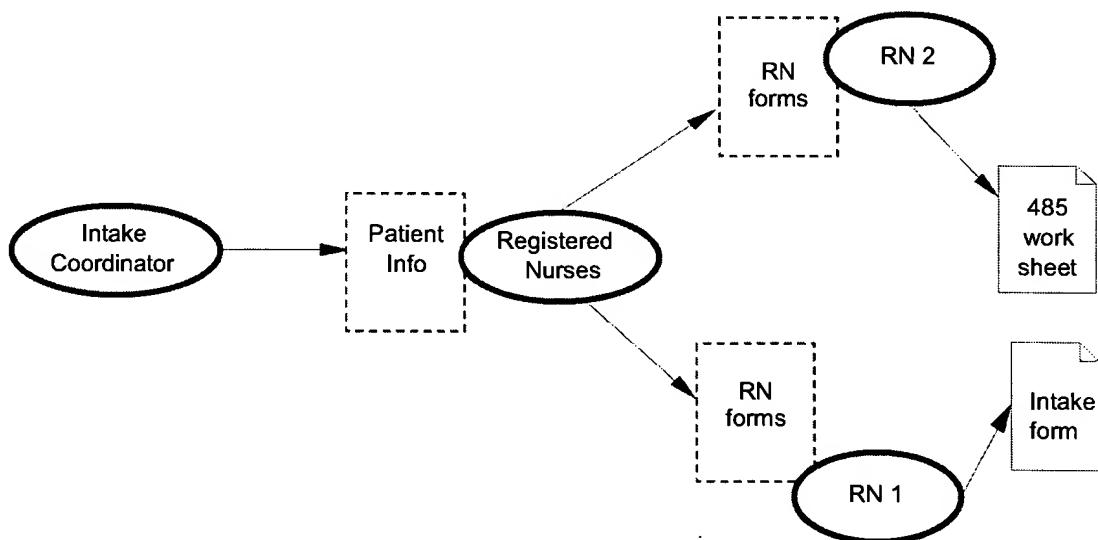
2

Figure 8 Reference Category

3 The Information Model is based on information that is used or created by each role within the organization. The
 4 Reference Category provides a mechanism to aggregate the information that is used by a group of professionals in
 5 the course of completing an assignment under a single category. This mechanism allows a particular data
 6 repository to be redefined without effecting the rest of the Information Model.

7 Facades

8



9

Figure 9 Facades

1 In figure 9 The category “patient info” is a facade, that represents information content of forms used by
2 Registered Nurses, from the point of view of the Intake Coordinator. The category “RN forms” is the information
3 content of forms 485 worksheet or Intake forms that are common to all registered nurses.

4 Using Facades makes it possible for RN1 role to begin using 485 worksheet without affecting other roles
5 in the Information Model.

6
7 Of course, the above description of the invention can be implemented in a number of other ways and
8 embodiments in addition to those discussed above including method and system that are integrated into a single
9 device/method or in modules. The following is brief description of one embodiment of implementation of the
10 invention.

11 The datasourceHARMONIZER (dsH) system is based on distributed application architecture and includes
12 modular components that support workflow management, data mapping, and application linking. These
13 components implement an information management system that is effective in a single workstations, centralized
14 databases, and clusters of workstations using client-server architecture.

15 A core component of the dsH system is the dsH engine, an ActiveX® component that is installed in user
16 workstations, laptops or handheld computers.

17 While systems administrators managing enterprise-wide applications use these components for tactical
18 data access solutions, end users of this information management system only see familiar generic office
19 applications like Microsoft® Word or Outlook®.

20 The following features and elements are included in the dsH system:

21 dsH Client – The dsH Client is an office automation tool that enables standard office utilities to
22 be used in conjunction with a business’s processes to transform any workstation or group of
23 workstations into a scalable information management system.

24 dsH Administrator Utility – The dsH Administrator Utility is a program for the information
25 manager that is installed in each system or database administrator’s workstation. This utility provides
26 the mechanism for the creation and modification of the harmonization rules used by the dsH™ engine.

27 Line-of-Business Solutions – These pre-built packages include customized (and customizable)
28 forms, add-ins, and application-specific macros and/or utilities for use with generic business software
29 such as Microsoft® Office. These turn-key packages include, for example:

30 - An ADT (admit/discharge/transfer) package that includes and interface for entering or updating patient
31 information and history.
32 - A caregiver package that includes scheduling and reporting of delivery services.
33 - A records administrator package that allows review of census data

34
35 dsH Engine – dsH engine is a core component of the dsH system architecture that facilitates
36 access to multiple databases from standard desktop utilities such as Microsoft® Office products. It will
37 be introduced with support for the following industry standards:

38 • Database interfaces to include HL7, DICOM, ASTM, and specific Virtual Medical Devices within the
39 IEEE 1073 family of standards as well as ODBC and OLEDB protocols.
40 • Microsoft® Windows® (95, 98, NT and 2000) platforms.
41 • Desktop utilities include Microsoft® Word, Access, Excel and Outlook®

1 System Designer Workbench (SDW) – SDW provides buyers with a simple tool that enables
2 them to describe their requirements and the SDW software selects the appropriate components. SDW™
3 components include a database that maintains the customer's configuration and a prototyping tool used
4 to explore alternative configurations. This capability supports the following features: Component
5 selection and purchasing; Remote configuration management; and On-line IT management.

6

7 Significantly, the invention's system architecture strongly supports extensions to other platforms, database
8 interfaces and desktop applications and utilities.

9

10 Another Preferred Implementation of the dsH Technology

11 In another preferred embodiment, the inventors have implemented the dsH component technology based
12 on Microsoft®'s Component Object Model (COM) initiative. Using COM components, the implementation
13 leverages Microsoft®'s OLE DB for uniform data access, making data universally available to the entire
14 Microsoft® Office product family.

15 The data interface layer is generalized so that the data source may be an object database, a flat file, a
16 Relationship Database Management System (RDBMS), or a standard interchange protocol (HL7, DICOM, ASTM,
17 etc.). Additional application-specific interchange protocols can be dynamically added.

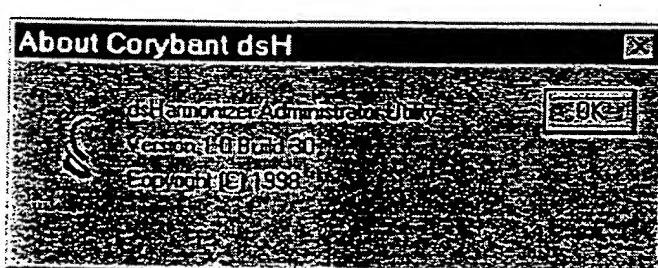
18 The dsH also provides data dictionaries with built-in drivers for healthcare standards. These data
19 dictionaries enable the components to locate the data classes (both physically and structurally) and extract the
20 information content by applying knowledge-based rules to that data.

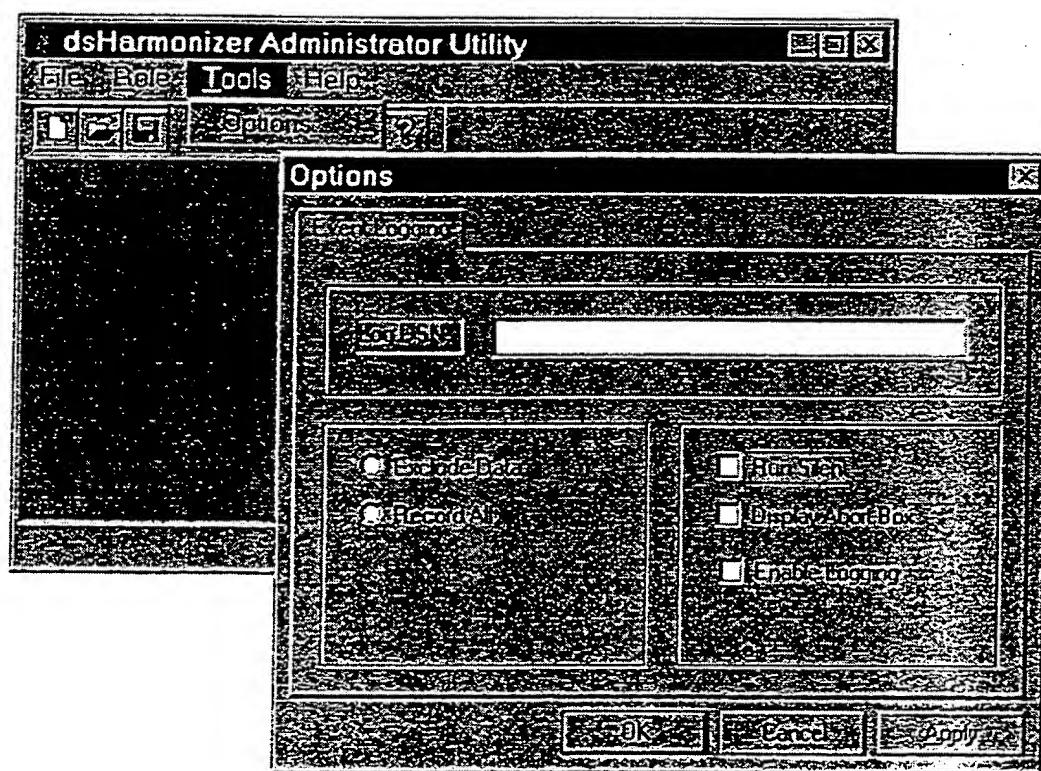
21 Additionally, the dsH provides an administrator utility to control access rights, incorporate changes, map
22 data, and customize interfaces for each provider or group of providers. Healthcare providers then work with just
23 the familiar user interfaces of the Microsoft® Office applications.

24

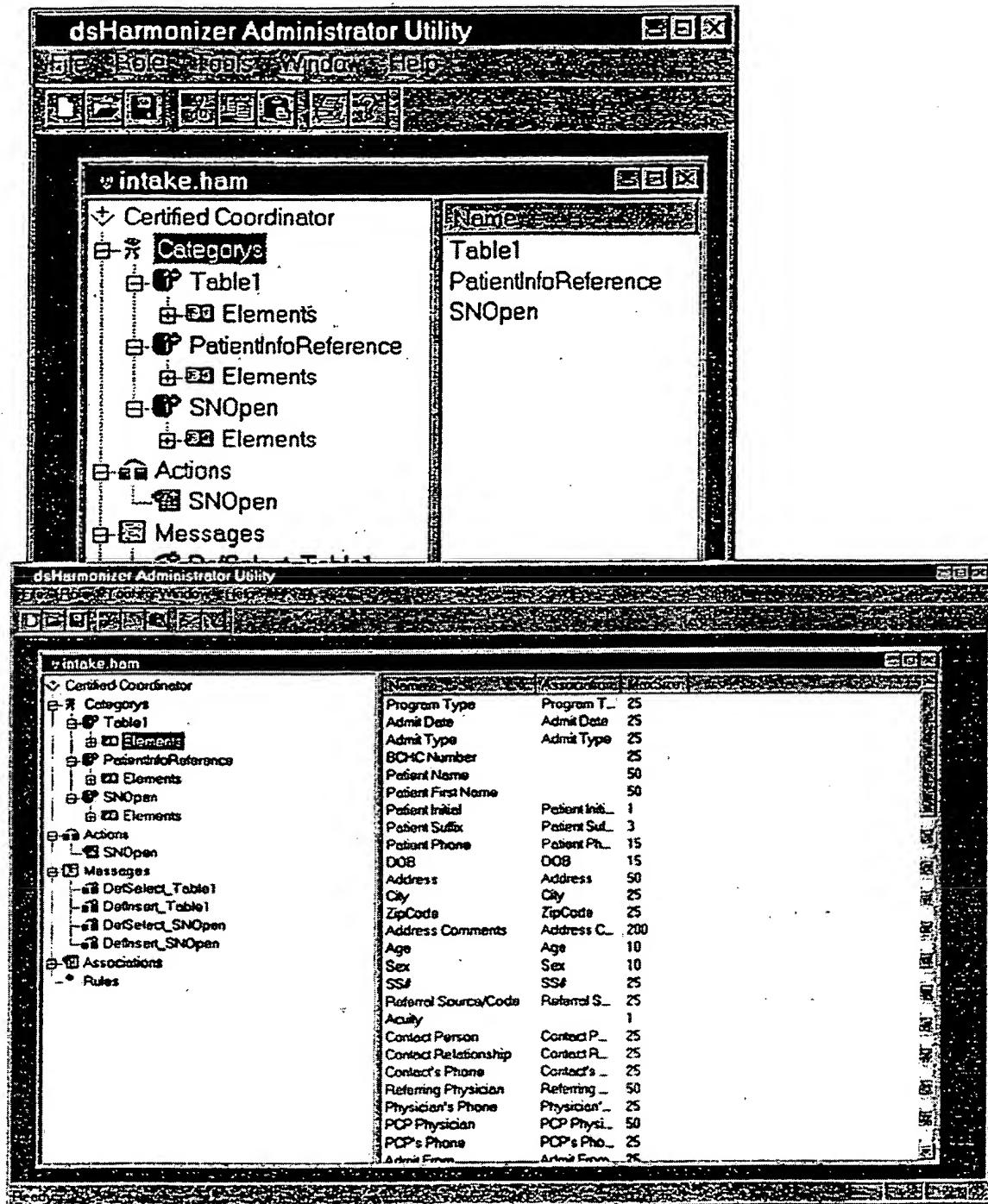
25 The inventors recognize that numerous programming languages, software suites and applications, and
26 computer hardware can be used to create and operate the invention. In one mode of operation, the inventors
27 utilized the following tools as an environment for building the invention: WinNT 4.0 with SP 4; Visual C++6.0
28 with SP3/ATL 3.0 and MFC 4.2; Visual Basic 6.0 SP3; MDAC 2.1 SP1; and Installshield for Visual C++6.0.
29 The inventors have also tested the invention and have proven the methods and systems to effectively and
30 efficiently operate in the test environments of: win98 with Install MDAC 2.1 SP1 and Win95 with latest SP
31 Install DCOM, and Install MDAC 2.1 SP1.

32 The following are screen shots of the utility program are provided for further description and disclosure
33 of screens visible to a user in one embodiment of the invention that was successfully tested.

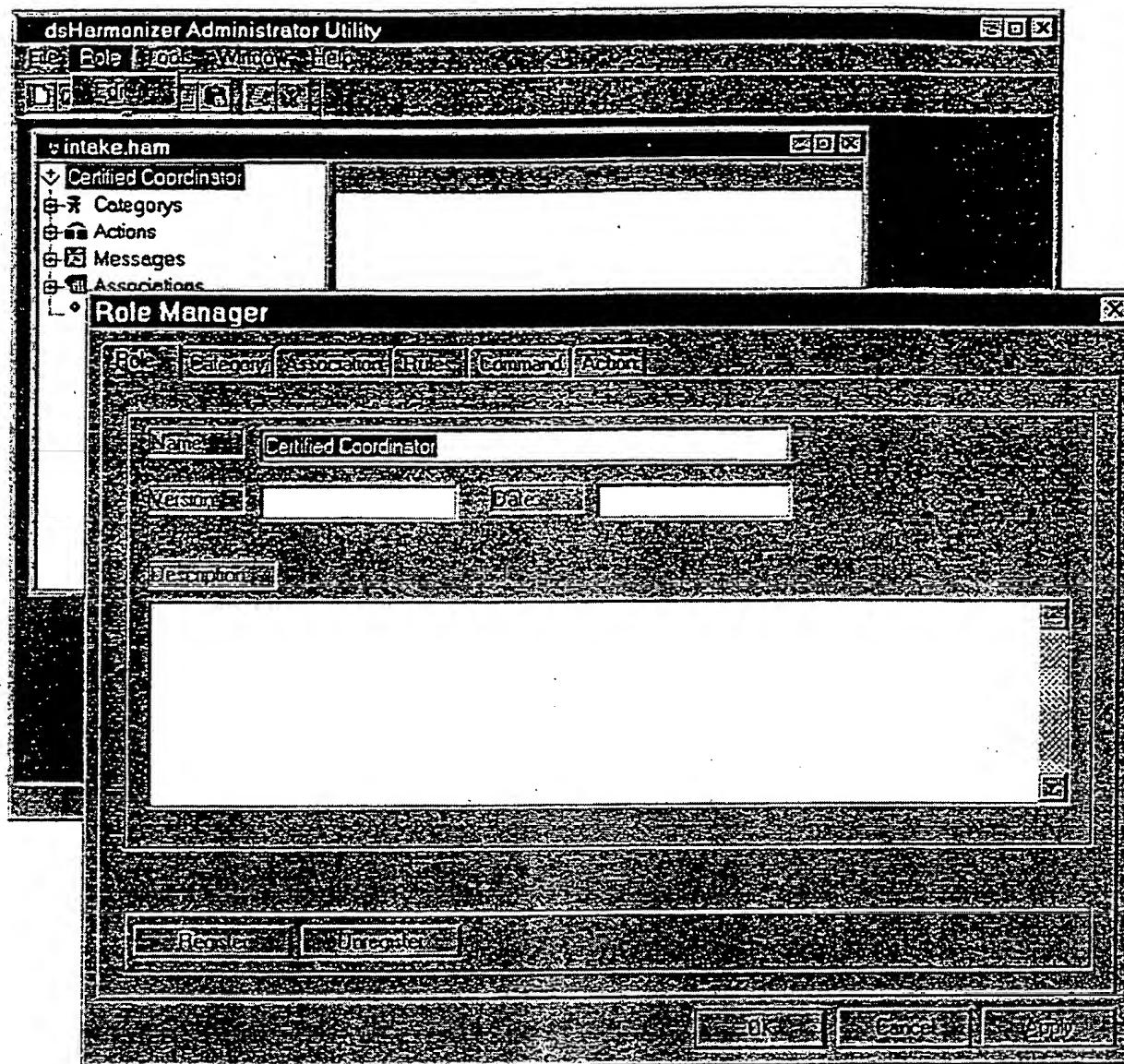


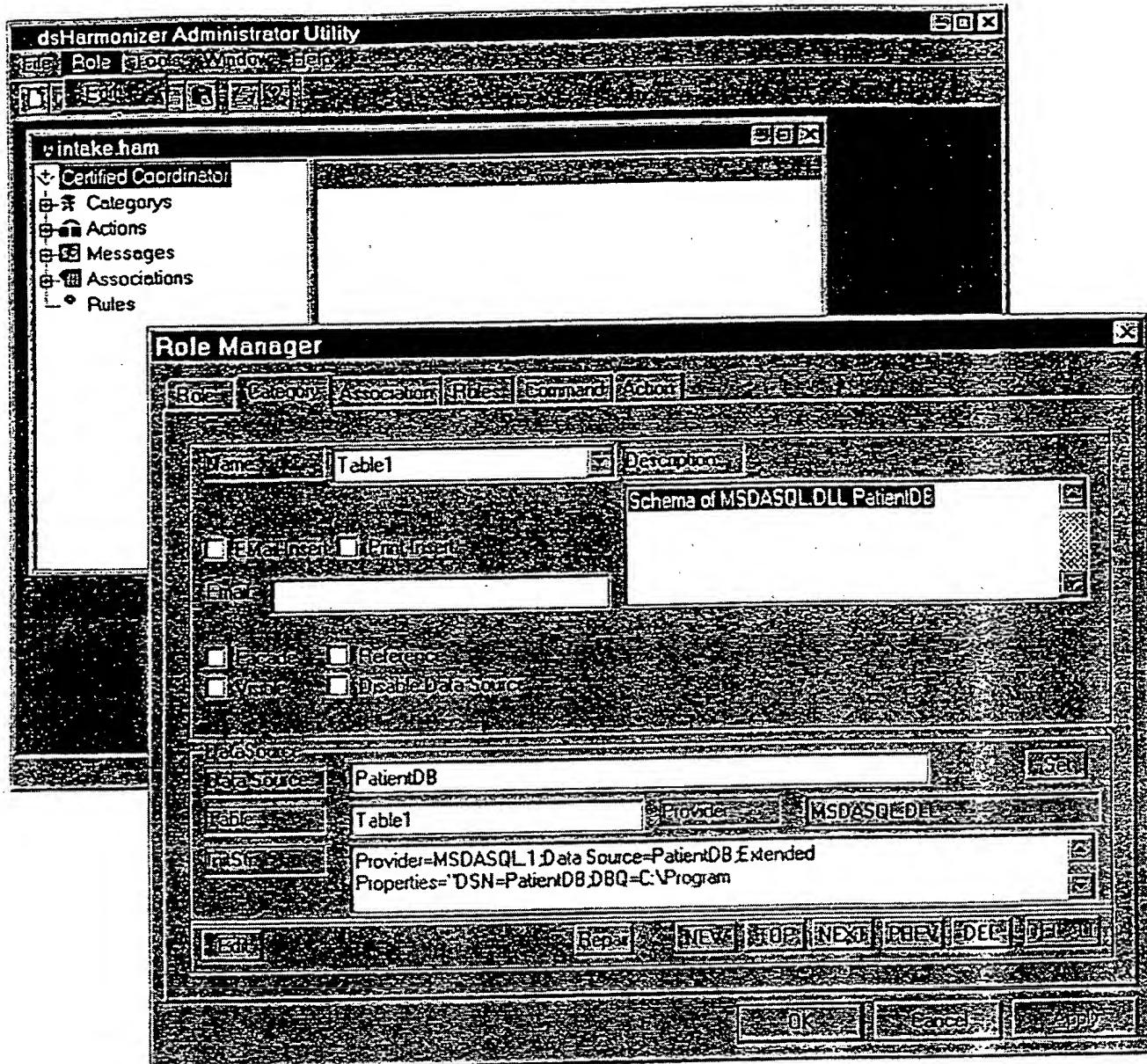


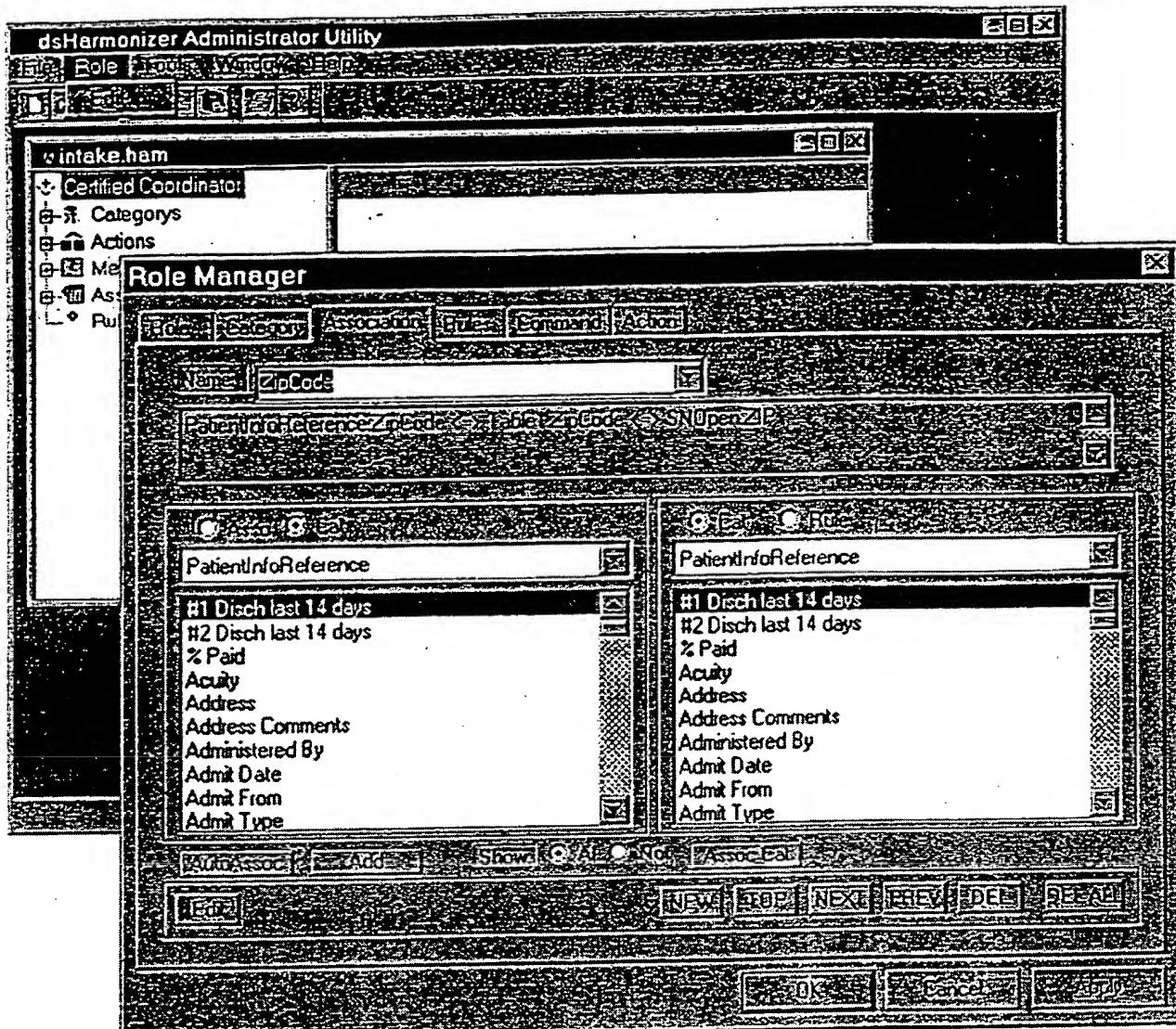
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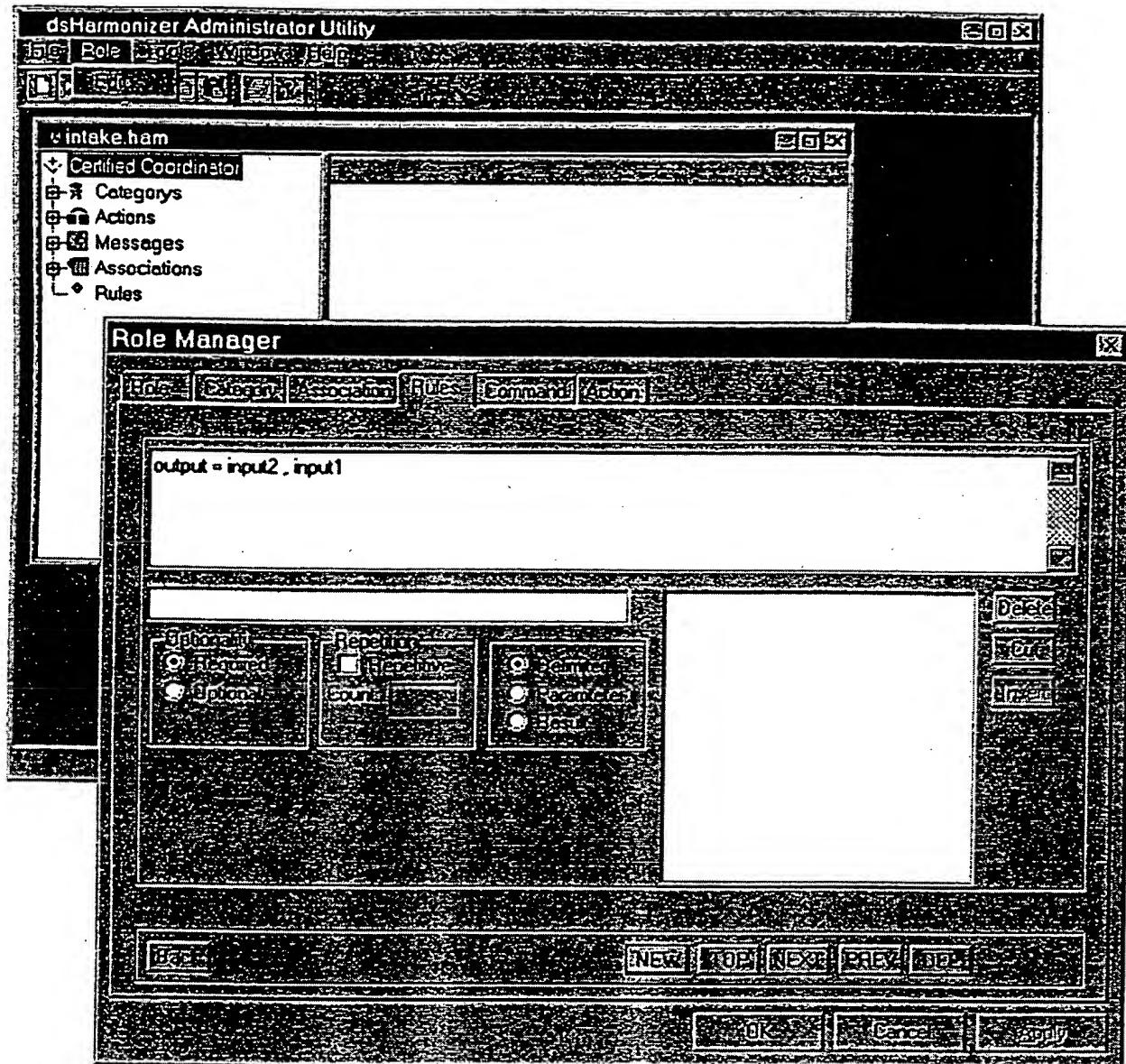


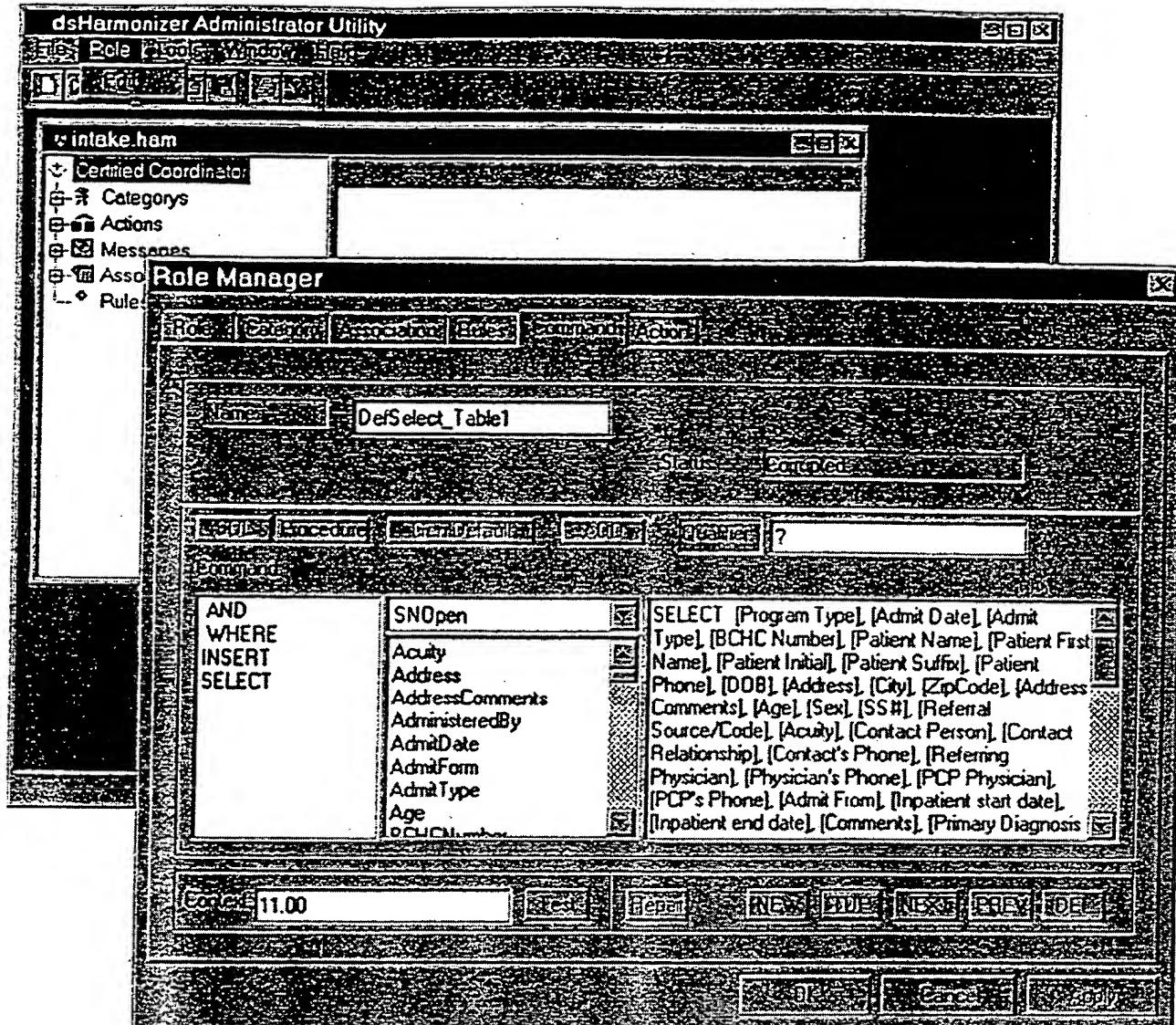
Edit Views:

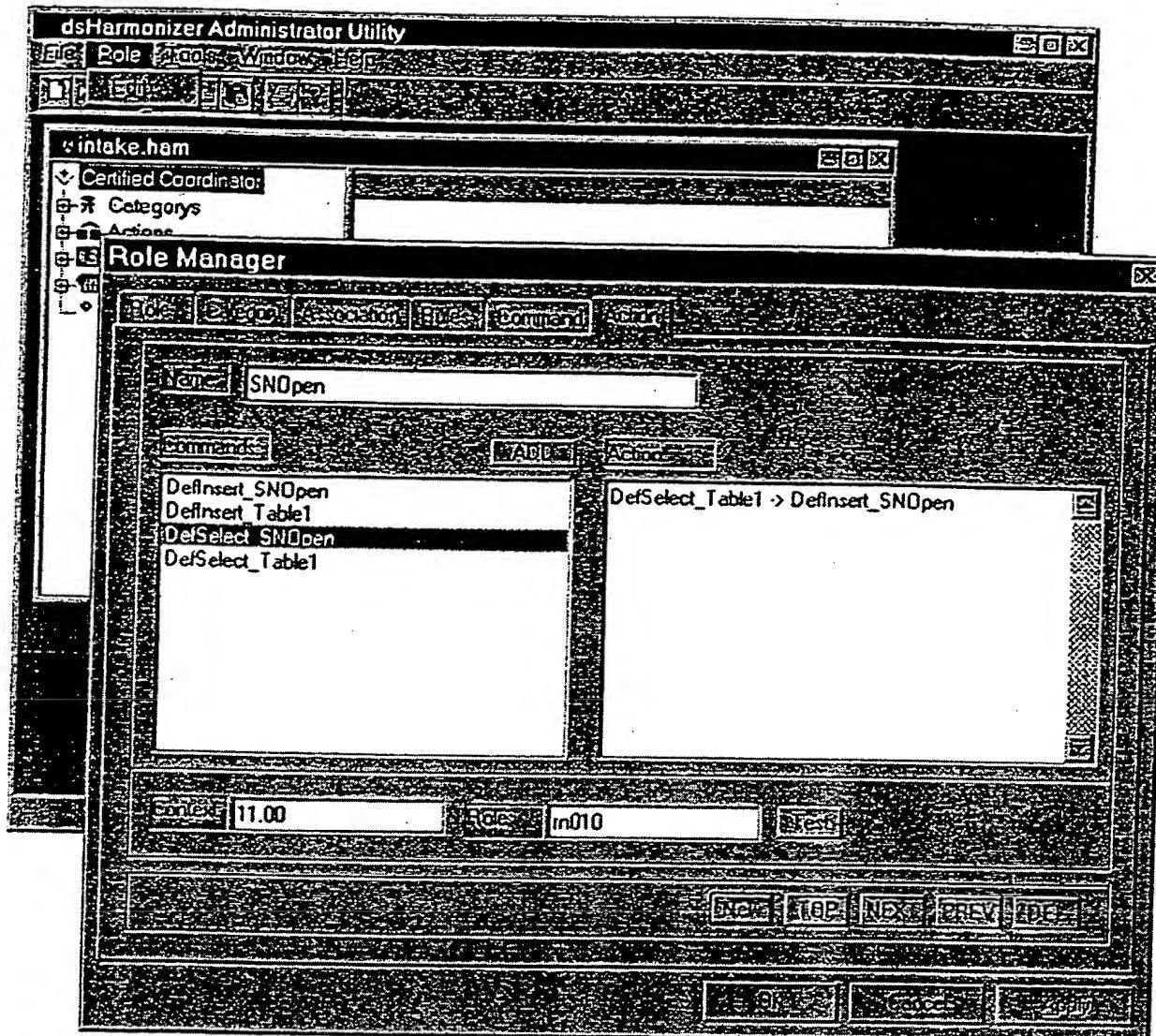












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